

The Iron Age

A Review of the Hardware and Metal Trades.

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Cowan's Hot Water Heating Apparatus.

We illustrate herewith a new system of heating with hot water which has attracted considerable attention in England. Fig. 1 is a longitudinal section, and Fig. 2 a transverse section, of the apparatus, showing all the important parts complete.

The substantial basis of the original conception, underlying the practical idea, is that of the utilization of otherwise waste heat. There are, doubtless, numerous industrial processes in which the resulting products are the primary objects regarded, and the subordinate questions of indirect realization—such as of bye-products, refuse and waste, spent heat, &c., have been dwarfed or ignored in presence of the direct results attainable, always more prominent than indirect results; nevertheless, wherever the item of coal as fuel forms an important element, the attainment of indirect means of reducing the cost of production has become more pressing. Among such the pursuit of lime burning has, hitherto, been one wherein the combustion of fuel has been carried on solely with a view to producing quicklime, and all the heat generated in the process has been allowed to escape and pass away without further utilization. Mr. Cowan, therefore, in his apparatus, has sought to combine the construction of an ordinary lime kiln, with such appliances and accessories as a hot water apparatus.

The main portion of the work consists in a mass of brickwork and masonry, containing the egg shaped kiln, wherein the limestone is burnt. A is the feed door, by which the kiln is charged with limestone or chalk and fuel in proper proportions; B is the archway and opening, whereby the lime, when burnt, is drawn from the kiln; C is the top or main boiler, and D is the ring boiler, containing the water to be heated by the surplus heat developed in the kiln; E, the origin of the main hot water pipe system, communicating with all the houses, buildings or premises to be warmed, and also with a compensating cistern; F is a duplicate series of connecting pipes, maintaining the communication between the main boiler and the ring boiler; G, the return mains, completing the circulation, for the return of the cooled water to the boilers, and communicating, also, with the compensating or expansion cistern, H—which is an essential intermediary, playing the part of safety valve to the whole system, and more particularly when circumstances render the heating unnecessary, while the lime burning must be continuous, in which case, by suitable adjustment of the valves, the heating effect is limited to the expansion or compensating cistern; I is the return pipe from the expansion cistern, leading to the lower or ring boiler; J is the chimney or flue outlet for the combustion products from the kiln; K, soot doors, suitably and conveniently located; L is the egg shaped kiln chamber, which, for an ordinary size, might be some 8 or 9 feet in depth, varying, of course, with the requirements of the locality, as to heating required, and lime burning; M, the valve and flow pipe to expansion cistern, H; O, blow off cock to ring boiler; N, the fire brick lining of the kiln, and P, backing of sand to the same.

There is little that needs comment in the practical working of the combined apparatus; the kiln being properly and fully charged, its contents are ignited and allowed to burn, while the heat evolved is made available in the boilers; and the kiln is kept burning so long as desired, the burnt lime being withdrawn from the opening at the bottom, and the charge at the same time renewed at the top by fresh supplies of fuel and limestone or chalk; and it is estimated, as the result of experience, that the attention involved amounts to about two hours of a man's time daily. As to the fuel employed, the patentee recommends the use of coke or anthracite, as being free from smoke. One of the chief advantages claimed for this system is the maintenance of a uniform temperature throughout prolonged periods, e. g., from twelve to twenty-four hours, thus obviating the costly necessity of attendance during the hours of night. Some consideration is doubtless due to the question of suitably locating the apparatus, which should by preference be exterior to the building warmed, or even isolated therefrom; nevertheless, it does not appear that in any case cause of complaint has arisen by reason of the evolution of smoke or noxious fumes, or inconvenience by dirt or otherwise. But the result on which the title of "compensating" is claimed for the Cowan system is broadly that horticultural buildings may not only be thus heated free of expense, but even remunerative; as it is stated that the resulting proceeds from the sale of lime more than suffice to cover all charges for fuel and material.

Although originally devised in connection with horticultural structures, the inventors claim for it perfect suitability for factories,

public buildings, mansions, and other edifices and institutions, public or private, where fuel is largely consumed. A recent modification and improvement consists in the introduction of a second main boiler inside the body of the kiln, an auxiliary calculated to give increased heating power, and promote uniformity of temperature, especially recommended in all cases where a length of more than 1000 feet of 4-inch piping requires to be heated.

Mr. Wauchope, at Niddrie House, has further applied the principle to the manufacture of coal gas, by running a retort across the upper

construction. As soon as steam is admitted from the steam pipe, it passes into the neck of the one working chamber, or the other, according to the position of the steam valve. Entering a narrow space above the water it minglest with the air within the space, and quietly bearing upon the upper surface of the water, forces it out into the discharge pipe with a pressure nearly equal to that in the boiler. During the movement of the water, the discharge valve (see dotted lines in the sectional view) is thrown wide open, and the suction valve remains closed. So soon, however, as

the chamber so that a constant flow is produced and maintained in the discharge pipe.

The steam valve is supported within the valve chest upon longitudinal ribs so as to be wholly surrounded by the steam entering the chest and comparatively frictionless in its bearings, and moving thereon longitudinally. It closes against flat seats at either end to cover alternately the ports into the respective chambers. It is, furthermore, balanced by means of cup shaped discs or pressure vanes, fitted loosely upon, and so secured to, its stem outside of its said ports, as that the steam admitted

the valves are inserted. These valves may, therefore, be readily removed for inspection, and quickly renewed or replaced at pleasure.

The Aquometer steam pump will thus be found to embrace every element of durability, simplicity and strength, while the simple, positive, frictionless movement of its steam valve, together with the effective arrangement of its working chambers and water valves, combine to produce an easy, steady, uniform movement of the pump when in operation, remarkable for its freedom from the noise and jar, and consequent strain and wear, incident to nearly all other pumps. The makers assure us that it is economical of steam, and for a pump of its class we have no doubt it is economical. Further information may be obtained from the Aquometer Steam Pump Co., No. 10 South Delaware Avenue, Philadelphia, Pa.

Gramme's Electric Machines.

M. Gramme has made a communication to the Paris Academy of Sciences respecting the improvements which he has made in his electric machines. The original machines ignited four inches of platinum wire three-tenths of a millimeter in diameter; the improved machines will heat to redness four times that length of the same wire, without any increase in the weight of the materials, or in labor. This augmentation in the intensity of the current is principally due to the employment of the new thin plate magnets of M. Jamin. The new electro-galvanic machines have only one central ring instead of two, and two electro magnets in place of four in the former machines. They weigh only 177 kilogrammes instead of 750 kilogrammes; only measure 55 centimeters by 60 centimeters in height, in place of 80 centimeters by 130 meters, but deposit 2,100 kilogrammes of silver per hour in lieu of 0,600 kilogrammes. The power required to work the new machines as compared with the old, is only as 50 to 75. They have the following advantages: (1) They only require half the space; (2) they are three-fourths lighter; (3) they economise three-quarters of the copper in construction; (4) they require thirty per cent. less motive power. These improvements have been achieved by the suppression of the exciting coil, the bringing of the electro-magnet into the circuit of the current, by an improved arrangement of the copper garniture of the bars of the electro magnets, and by a slight increase in speed. The original electric light machine fed a regulator of 900 carbon burners, its weight amounted to a ton, and it occupied a space of 80 centimeters square, by 120 meters in height. This machine heated itself, and gave rise to sparks between the bobbins and the conductors. The new machine is composed of a framework in cast iron, two electro-magnetic bars and a single movable central ring, instead of six bars and three rings. It is only fifty-five centimeters square and sixty centimeters high, and its normal power is two hundred burners.

Chinese Coal.—The British Acting Consul at Newchwang states in his report this year that the native coal supplied at that port was repeatedly tried in 1873 by foreign trading steamers and by men-of-war, and that the result was, on the whole, extremely satisfactory. Mr. Pringle, engineer in Her Majesty's ship Thistle, which took on board a ton of coal procured from Pen-hsi-hu, for the purpose of trying it, reports it superior to any Chinese or Japanese coal he had seen tried. It ignited rapidly, kept steam very well, left very little deposit in the tubes, and no clinker on the furnace bars. It burst away quickly, but this would probably be prevented by mixing it with a more bituminous coal, such as our north-country coal. Mr. McLeod, chief engineer of the British steamer Saku, made two trials of this coal, 40 tons each time. He reports it as looking very much like Welsh coal, and being principally an anthracite coal, with very few traces of the bituminous kind visible in it. He found it to ignite slowly, and in order to have steam ready at the time ordered he had to mix some Kelung (Formosa) coal with it. It required a strong draught. He says, "I have no doubt at all that, in the district where this coal came from, there is steam fuel to be procured superior to any I have seen in either India, China or Japan." Several other steamers tried it, and the engineers speak well of it as a really superior coal, but it is stated that it often ignites with difficulty from being mixed with combustible matter. The Consul observes that the Chinese do not get further than the outcrops, and these may be unfit for steaming purposes, while the middle of the seam is good steaming coal. He thinks the probability is that far finer coal than has yet been supplied in Singtze may be brought to light by the skill and science of foreign engineers. In Formosa coal has long been dug to some extent from Kelung Hill, notwithstanding prohibitions issued from time to time at the instance of the gentry and people, who feared that "the pulse of the dragon" (geologic influences) would be injured. The so-called suppositions of the Chinese seem to have been directed entirely against foreigners.

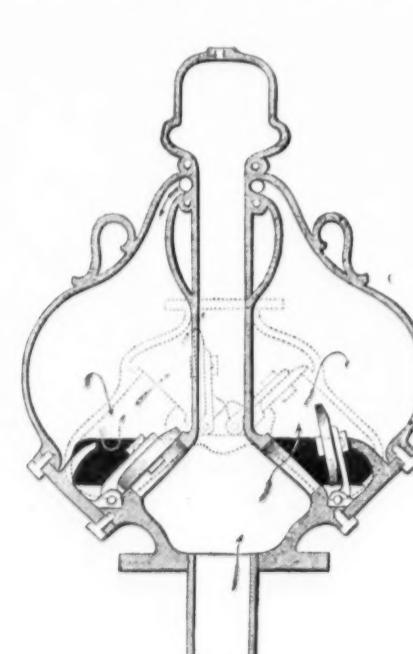
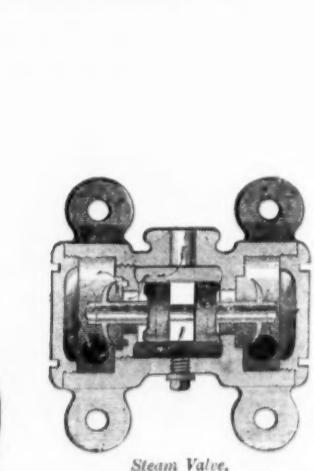
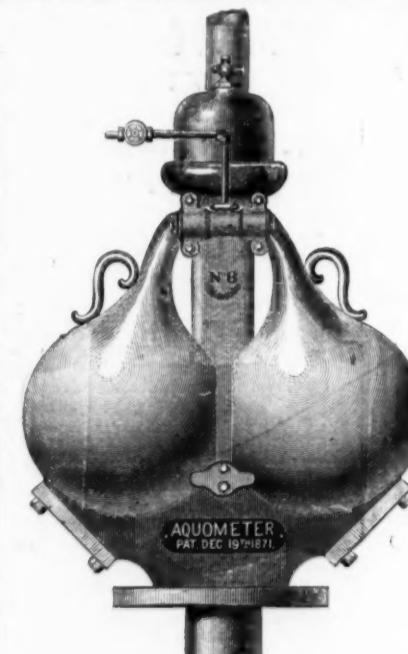
part of the kiln; and the coal therein converted, when taken out as coke, is used in the kiln below.

The Aquometer Steam Pump.

The pump shown in the accompanying illustrations is an improvement upon a class of so-called pumps which, under various names, have

the live steam reaches the discharge port, its free escape through the vent thus suddenly opened for it, produces a sudden reduction of pressure within the working chamber, with the following results: 1st. It allows the discharge valve to close; 2d. By disturbing the equilibrium of pressure within the steam valve chest it produces an instant movement of the steam valve so as to cut off

through either port by a movement of the valve shall exert a pressure upon the corresponding vane which will tend, so soon as a reduction of pressure occurs as described within the pump chamber and on the outer side of the vane, to cause the valve to move and close that port and simultaneously open the opposite one. The flat seats of the valve will, in wearing, naturally remain tight, but if marred or cut by accident,



been for some years more or less favorably known to the public.

It consists, as shown, of two working chambers, combined with an interposed pressure chamber. Its only moving parts are the customary check valves, arranged to prevent a reflux of the water entering the working chambers and discharge pipe, and a very simple and ingenious steam valve.

There are no rubbing surfaces to produce friction or require lubrication; no parts requiring delicate adjustment or special attention, and none which are subjected to great strain or wear.

The operation of the pump is as simple as its

the further admission of steam into that chamber. 3d. It simultaneously permits the body of water in the central pressure chamber to open the suction valve and cause an instantaneous condensation of the entire volume of steam within the working chamber so as to produce a vacuum therein, which will cause it to fill with water from the suction pipe under the full force of atmospheric pressure. So soon as the chamber has thus filled and the suction valve closes, the momentum acquired by the water flowing up the suction pipe will operate to fill the pressure chamber. As the one chamber is thus filling, the steam current operates to force the water out of the opposite

they may be readily renewed by grinding without removal if desired; or the valve may be removed and replaced by simply taking off one end cap and unscrewing the seat piece. The ribbed bearings afford protection to the valve against the effects of dirt or grit which may enter from the steam pipe, and any such material which may thus collect between the ribs, may be blown out through a small vent, formed centrally in the under side of the valve chest, and which is closed by a simple plug.

The water valves of the pump are pivoted to loose blocks, which are secured in place by the plates covering the hand holes through which

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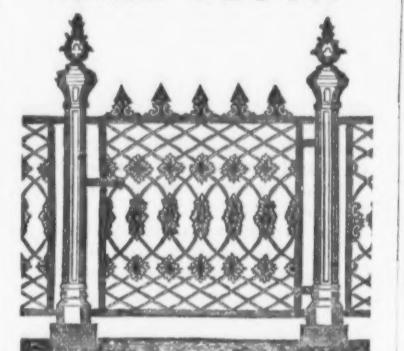
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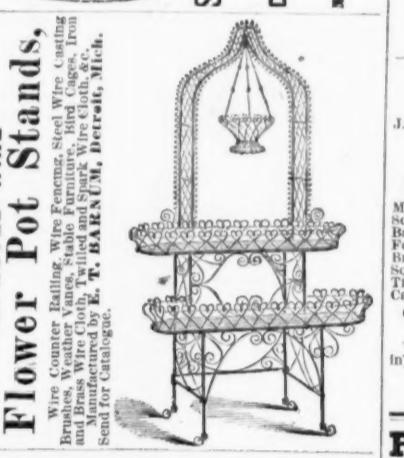
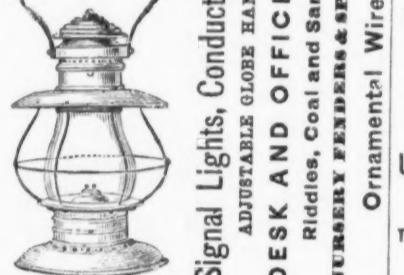
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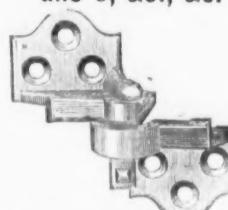


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We condense the following from the Liverpool Express:

These works occupy fully 28 acres of land. They are situated very advantageously on an angular point, bounded by the London & Northwestern, by the Midland, and by the Furness railway systems, branches from all of which are introduced into the works, and for the more efficient and successful utilization of these, the company has had constructed for their own purposes a number of small tank locomotives, which convey the varied materials used in the works in hopper bottomed wagons, which are drawn up a railway having an incline of one in thirty, and which passes along the top of the bunkers, into which the coke is dropped at once. The limestone used as a flux, and also the ore to be smelted, are likewise deposited in convenient proximity to the coke and to the furnaces. From these repositories the insatiable demands of the furnaces are readily supplied in barrows, which, filled and wheeled from the bunkers and the heaps, are placed on steam worked hoists, by which they are instantly raised to the level of the galley and into the tops of all the furnaces, and into these they are at once discharged.

The materials used are, for fuel, the best South Durham coke, of which about 25 cwt. are required for the ton of iron produced, for the production of which about 38 cwt. of uncalcinated ore are required, and about from 9 to 10 cwt. of limestone. The ore, which is very rich in metalliferous ingredients, is obtained in any required quantity from the Whitehaven and Furness district, whose metallurgic wealth is proverbial and almost boundless; the limestone, of admirable suitable quality, is obtained from quarries belonging to the company, and situated within a mile of the works; and the coke from the fertile coal district of South Durham, with all of which points the Carnforth Works are in direct railway communication, and they have also direct railway communication with Morecambe, where shipping accommodation is readily obtained.

The smelting furnaces in this establishment are six in number, that they are all of recent construction, and embrace all the most recent improvements for facilitating working. They are each 65 feet in height, and are 20 feet in diameter at the boshes. Each of these furnaces is capable of running from 18 to 22 tons of iron on one cast; and when producing Bessemer iron, which at present they are entirely engaged in the production of, they are "run" three times each 24 hours, or every eight hours, so that of this iron you can make from 60 to 66 tons daily. For the production of forge or foundry iron they are run every six hours, or four times in 24 hours, making an average of from 80 to 88 tons daily. When in full operation this will give an aggregate product of about 14,000 tons per month. At the present time only three of the furnaces are in constant blast, and these are employed entirely in the making of Bessemer iron, which is principally used in the Sheffield district for the manufacture of steel rails. All of these furnaces are worked on what is called the close top principle, which is one of the recently introduced improvements in the construction and working of iron smelting furnaces. It consists in fitting the upper rim of the furnace with an inverted conical bell, suspended by a powerful lever—which here is worked by hydraulic power—and which fits close to the mouth of the furnace. The coke, limestone and ore are emptied from the barrows in successive layers, regulated as they are to be in the furnace. When this hopper, as it may be called, is filled, the bell is lowered into the mouth of the pit, and the superincumbent materials slide gradually off and are dropped into the fiery abyss below. This process is repeated from time to time throughout the day and night, and when the fusion has been completed to the required extent, the furnace is tapped at the bottom of the "well" by which process the metal is run out, and being caught in a prepared channel is distributed over a large bed of sand, previously molded into forms, which in the reverse represents the pig iron of commerce. The sand for this purpose, of which large quantities are required, is obtained to any extent from the adjoining sands of Morecambe Bay.

The close top system as applied to iron smelting is of comparatively recent introduction, and, like many other improvements, it has not been received with universal approbation. Its advocates, however, claim for it several important advantages, conspicuous among which is the saving and utilization of the combustible gases generated in the furnaces during the combustion of the coke and the fusion of the other materials used. A great convenience secured by the use of the close top system of working is found in the greater regularity and method by which the materials are deposited in the furnaces, and the comparatively greater comfort of the men employed in feeding the blast. By far, however, the most deserving of consideration is the immense saving effected in the general working of the establishment by the economical application of the saved gas, which under the old system was literally wasted. The gas saved by the process now under consideration is applied in supplying heat in the various departments which require that in large abundance. To comprehend this, in some measure, it may be stated that the whole of the furnaces are worked by hot blast, and each one has four hot blast stoves, fitted with a series of convoluted tubes, through which the air is forced by steam-power, acquiring as it passes an augmentation of temperature, which on its passing out of the stove into the blast furnace has acquired a temperature of 800° to 1100° of Fahrenheit, an amount of heat which instantly melts lead, and even fuses zinc! Under these circumstances, to say that the air is red hot is only a very feeble way of stating the case. Yet,

The Carnforth Iron Works, such as they have just been described, form a very important feature in the history and social and economic condition of the district in which they are situated. A few years ago it was little better than a waste upland, almost uninhabited. It is now the nucleus of a rising town, with a rapidly increasing population. The works at present employ upward of 300 hands, and when the steel works and other contemplated extensions are completed, industrial occupation will be afforded to fully 800 men and lads. Carnforth is already the official center of an extensive postal district, and there seems every reason to expect a still further development of industrial resources in the neighborhood. In conclusion, it is but bare justice to state that the selection of the site, the design and plan of the works, and the successful carrying all these into practical operation, have devolved on Mr. Edward Barton, the active and intelligent manager and secretary of the company, upon whom the success of the establishment reflects exceedingly high credit.

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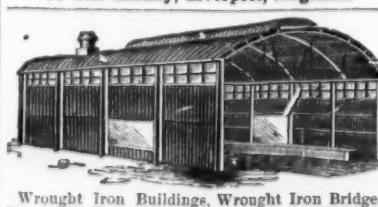
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Fig. 1.

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W.

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water ways are so large and free. By raising the handle and giving it a quarter turn, the shank, which is oval, catches upon the sides of the hole and keeps the plug from falling. When the plug is in place and the basin is filled, the waste water flows down to the plug, then rises around the central tube to the top, as shown by the course of the arrows, and flows down through the central tube. The top of this inside, or overflow, tube, is made three inches below the top of the

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"Standard Taper" Axles & Swedes Iron,
WINDOW GLASS,
Wrought Iron Pipe and Boiler Tubes,
Chains, Rivets, Nuts, Washers, and Heavy
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Iron and Nail Works Company,
RICHMOND, VA.,
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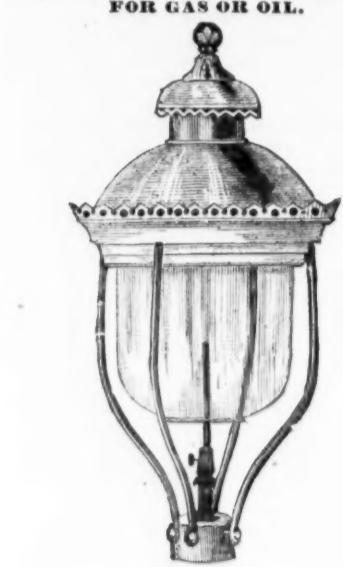
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Bands, Scrolls, Horse Shoe Bars Nut and
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Bolts, Ovals, Half Ovals, Half Rounds, &c.

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Rolling Mill Comp'y
Manufacturers of Merchant, Horse Shoe, and extra
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Special orders taken for common Iron.
New Haven, CONN.

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TIN WARE,



MINER'S PATENT
Street and Depot Lamps.
FOR GAS OR OIL.

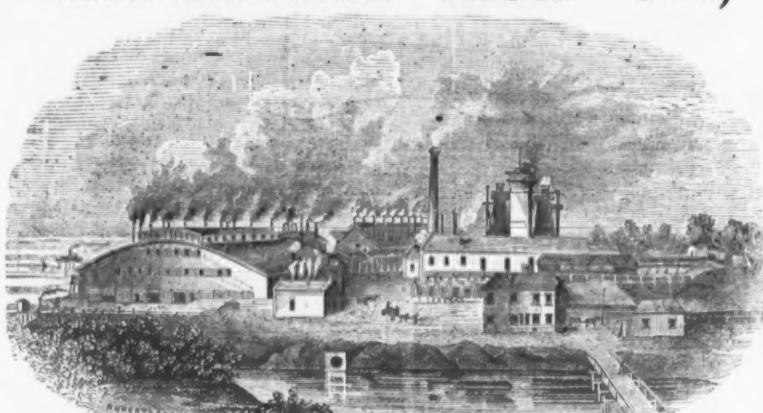


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THE PATENT SELF-RIGHTING
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It is stronger
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it will not break,
and as the lower
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CAST-IRON,
will not corrode as
quickly as other
articles composed of
sheet metal for
the same purpose
and if upset, it
rights itself immo-
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RAILROAD IRON

From 30 to 65 Lbs. per Yard.

Re-Rolling done on short notice.

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BEST NO. 1 FOUNDRY IRON constantly on hand and for sale in car-load or larger lots, at lowest market price.

Merchant Bar Iron.

A FULL ASSORTMENT—SUPERIOR QUALITY.

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P. J. POTTER. JOHN W. HOFFMAN. WILLIAM TOOHE. SOUTHDARD HOFFMAN.
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SELF-LUBRICATIVE
Hemp Piston Packing**
FOR
Locomotives, Steamships, Stationary Engines,
Hot or Cold Water Pumps.
Recommended by Master Mechanics and Engineers, as the
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Prices. No more Fluted Rods**—but a good article at
fair price.
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Rules, Planes, Iron Planes, Grooving Plows, Gauges, Plumbs and Levels, Hand Screws,
Bench Screws, Handles, Door Stops, Try Squares, Sliding T Bevels, Turning Saw Frames
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Illustrated Catalogues of 1875 furnished on application. Address,

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Having great facilities
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well as costly, using Way-
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at least one-half, we are
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Of any length or diameter, for Steam Engines, Exhaust Steam, Fire Purposes, Refineries,
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Of all sizes, with necessary connections for
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LAMP POSTS, FIRE HYDRANTS,
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Manufacturers of

HORSE AND MULE SHOES.

NEW HAVEN, CONN.

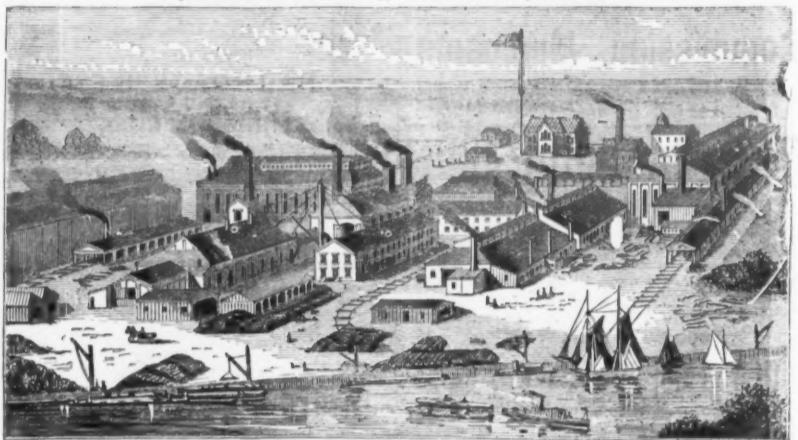
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And all the
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of Gas, and Street Mains Requisite for its Distribution.
Plans, Drawings, and Specifications promptly furnished.

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FORTY-EIGHT Inches in Diameter.

Stop Valves (all sizes), FIRE HYDRANTS, HEATING PIPES, BRANCHES, BENDS, TEES,
CASTINGS of any form or size required.

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PROPRIETORS OF THE

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POTTSVILLE, PENNSYLVANIA.

Having introduced New and Improved Machinery into their Rolling Mills, and manufacturing all their
iron from the ore, and also doing all Machine Work and Repairs in their own shops, they are enabled to
produce

RAILROAD IRON

Of uniform quality, unsurpassed for strength and wear, and of any required length.

Address the Proprietors Pottsville, Pa.

The Britannia Ironworks Company, Limited,
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MANUFACTURERS OF

ALL DESCRIPTIONS OF IRON RAILS

Surplus Stocks of Various Sections always on hand.

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Weekly Output, One Thousand Tons.

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Glue & Curled Hair, Cow Hide Whips.

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Iron & Brass Wood Screws.

Full assortment constantly on hand.

ALFRED FIELD & CO.,

Importers,

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W. & B. DOUGLAS,
MIDDLETOWN, CONN.

The Oldest and Most Extensive Manufacturers of

PUMPS,
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GARDEN ENGINES

AND OTHER

Hydraulic Machines

IN THE

WORLD.

Awarded the GRAND MEDAL of PROGRESS at WORLD'S EXPOSITION, VIENNA, 1873, being the highest awards on Pumps, &c., also, highest medal at PARIS in 1867.

Descriptive Catalogues and Price Lists sent when requested.

BRANCH WAREHOUSES,

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137 Lake St., CHICAGO, III.



OLIVER'S Chilled Plows.



These implements in their present form, though four years before the public, show the following remarkable record:

1506	were sold in the season of	1871.
3019	" "	1872.
7472	" "	1873.
14,976	" "	1874.

(Exclusive of sales in new territory), while for the season of 1875, the capacity of the works has been increased to turn out 30,000 plows complete.

The cause of this astounding result is that the **OLIVER CHILLED PLOWS** prove on trial to be all and more than we claim for them, on following points:

- 1st. They are the lightest draft.
- 2nd. They are the most durable.
- 3rd. They are perfectly adjustable and have a center draft.
- 4th. They will scour in all kinds of soil.
- 5th. They are the cheapest plow used.
- 6th. They are the only chilled plow made.
- Our plow is the only true moldboard plow, combining the soil to touch every part with equal firmness; the shape is easy and natural and abrupt angles do not exist, while our chilled iron possesses a peculiar smoothness and solidity throughout, far ahead of any other metal used in plows.

Our second point needs no explanation from us, as chilled iron is conceded by all to be the hardest and most durable metal used for this purpose.

Its temper is uniformly hard, and will not scratch nor corrode.

Our third point is secured by a movable beam, placed over the center of the work, which can be so nicely adjusted by moving to the right or left, that the plow will run without handling. With these plows the most interesting portion of farm labor becomes a pleasure instead of a task.

Our fourth point is secured by the combination of our chilled metal, with the common sense shape of moldboard and share. Every part of the metal below the ground is subject to equal wear, leaving no portion untouched to which the soil can attach and clog the plow. The change from gravelly to prairie soil can be made with safety, as the metal is so hard that it can be secured in its place by its peculiar smoothness and is not disturbed, and scour it again.

Our fifth claim is easy to substantiate, for the draft of **OLIVER'S CHILLED PLOWS** will average fully twenty-five per cent. below that of all others, which means that, out of every four days' work w'th other plows, the labor of one may be saved, by using

OLIVER'S CHILLED PLOWS, with the same amount of power expended. The great durability of these plows, consequent upon the extreme uniformity and hardness of the chilled metal, is another item to be considered in this connection.

Our chilled moldboards, after plowing one hundred acres, show a loss of weight of from four to seven ounces, depending on the soil in which they are used.

This result cannot be equaled, much less surpassed, by any other metal, or combination of metals, ever used in plows.

Our sixth claim we will not discuss here, but should it be disputed by any one, we shall be happy to convince the most skeptical of its truthfulness.

Come to us for the proofs at any time, and we pledge our words they shall be produced.

We are the only manufacturers for the world that devote their entire capital, time and facilities to the production of plows, and the natural result is, perfection in the implement produced under such circumstances.

For full descriptive circulars explaining the merits of

OLIVER'S CHILLED PLOWS, or other information relative thereto, address,

South Bend Iron Works,
SOUTH BEND, IND.

The Society of Arts' Stove Prizes.

Two years ago the British Society of Arts announced that they had been intrusted with the sum of £500, to be spent in the promotion of improved and economical arrangements for the domestic consumption of fuel. After some consideration, it was determined that no better course could be pursued than that of offering a series of prizes for the best stoves, of certain specified classes. It may now be a question whether it would not have been better to have instituted a series of experiments into general principles, leaving the manufacturers of stoves to bring forward their wares for themselves; but it was, doubtless, considered at the time that the course adopted was the most likely to produce a practical result, by bringing forward new or little known apparatus. At all events, the result cannot be considered as otherwise than disappointing. The committee have just issued their report, in which they give it as their opinion that none of the specimens brought before them are worthy of a prize.

Of course, such an expression of opinion can only carry weight according to the authority by whom it is expressed, and the pains which have been taken to arrive at it. When it is remembered that the committee included such men as Mr. F. A. Abel, Mr. F. J. Bramwell, Dr. David Price and Captain Douglas Galton, it must be allowed that any conclusions put forward by it will carry weight, while, inasmuch as the examination and testing of the stoves has been going on since the commencement of 1873, it cannot be said that these conclusions have been arrived at hastily. The actual experimental testing of the stoves extended over a period of 142 days, and 107 were tested out of 294 sent in. As there were six rooms in use at the same time, this allowed eight days for each stove, fitting and testing—ample time for trying its capacities, whatever they might be. It is not to be supposed that the experiments were carried out with the completeness which would have been expected from, say, a government department; but all who had any opportunity of seeing them in progress, will allow that they were conducted with the utmost care, and that the results may be considered as approximating, at least, to scientific accuracy. These results were tabulated with great care, and it was, we believe, originally intended to publish them, but it is now understood that the committee have at last decided not to publish—presumably, on the ground that their only duty was to adjudicate a prize for novelty and efficiency, and not to offer an opinion on the comparative merits of stoves already before the public. It is also questionable whether the tabulated results, intended to decide the comparative merits of the competing stoves, have been carried out sufficiently far to warrant publication and the consequent deduction from them of general principles.

This result cannot be equaled, much less surpassed, by any other metal, or combination of metals, ever used in plows.

Our sixth claim we will not discuss here, but should it be disputed by any one, we shall be happy to convince the most skeptical of its truthfulness.

Come to us for the proofs at any time, and we pledge our words they shall be produced.

We are the only manufacturers for the world that devote their entire capital, time and facilities to the production of plows, and the natural result is, perfection in the implement produced under such circumstances.

For full descriptive circulars explaining the merits of

OLIVER'S CHILLED PLOWS, or other information relative thereto, address,

South Bend Iron Works,
SOUTH BEND, IND.

be disintegrated and partially reduced to the gaseous condition before the act of combustion can take place. It is a question whether this reduction cannot be effected more cheaply than in the ordinary process of burning coal in a grate. General experience goes to show that, at average present prices, for the amount of heat produced, coal gas is a costlier fuel than coal, whatever may be the practical advantages attending its ordinary use. These and similar questions must all be decided before long, as they certainly can be by careful and judiciously directed research. For the present, however, we may safely confine our attention to the endeavor of utilizing, as far as possible, the heat which we know that we have at our command, leaving the question of a new fuel, or a new condition of our present fuel, for future settlement.

It is from those who approach the consideration of a subject from outside, who have not got into the traditional way of treating it, that we expect entire and absolute novelty. From those accustomed to any manufacture we look for improvement in details. In both directions there is ample room for inventive genius, but it is highly desirable that the question should be further investigated, in order that manufacturers may have some certain set of principles on which to work. That these latter have not availed themselves of the information readily accessible is pretty certain. For instance, the man who constructs a kitchen range with several ovens heated successively by the same arrangement of flues, so that all the ovens have the same heat, or those furthest from the fire somewhat less than those nearer, and then calls the first oven a "roaster" and the last a "baker," shows an ignorance of the elementary fact that it requires a temperature of 450° Fahr. to bake bread, while meat should be roasted at 180° or 200°. Again, if a stove maker tells you that a terra-cotta stove is wholesome because "it absorbs all the noxious products," it is at once obvious that though his practice is correct his theory is nonsense, and there is consequently no guarantee for his following out the true principles of manufacture. Such instances are common enough, and they go to show that we want more information and better dissemination of the knowledge we possess. Hence, we hope that some good may yet come of the action of the Society of Arts in the matter, and that the mass of facts its committee has gathered may hereafter be turned to good account as a foundation for future examination and research.—Iron.

Coal and Iron In Frederick and Hampshire Counties, West Virginia.

The Reading (Pa.) *Times* says: A gentleman from this city who recently visited the great ore and coal deposits in West Virginia, lying in Frederick and Hampshire counties and vicinity, and was impressed with their importance and value to the trade in this country, sends us the following communication, to which we cheerfully give place on account of its interest to the large manufacturing element in this city:

The largest and most valuable mass of iron ore perhaps on either continent can be seen along the chain of the great North Mountain, along the borders of Virginia and West Virginia. This vast belt of ore runs some hundreds of miles in a regular and unbroken formation from which the Zanes, Van Buren, Columbia, Newmans, Elizabeth, Esteline, Bath, California, Australia, Lucy Selina, Catawba, Capon and other charcoal furnaces (which are all in the line of this deposit) draw their supply of ores. All produce excellent iron, much of it superior and noted. Rogers, in his report on the Geology of Virginia, for 1837, speaks thus of this valuable belt (see his report, page 18): "The ores of this belt are mainly hematite, of various aspects, honeycomb, pipe and massive." These hydrous peroxides of iron (by the numerous analyses of Rogers) may be said to contain 70 to 87 per cent. of peroxide of iron. The amount of metallic iron in 100 parts varies from 40 to 60. There are at least half a dozen of citizens of Reading who had opportunities of examining this vast belt of ore during the last three or four years. They will, no doubt, sustain me in saying that enough ore can be mined from this vast region to supply this country for ages, which will not cost more than fifty cents per ton at present rates of labor.

These are solid facts fortified by the immense mass of iron ore exposed on the surface for any one to see at all times what is in store for the future iron industry of this country. West from great North Mountain iron ore ranges about 35 miles, the Allegheny coal fields are reached, running parallel with the Iron Mountain.

These coal need no recommendation; many thousands of tons have already reached the iron manufacturers of Eastern Pennsylvania, who can testify as to the quality, etc., of the West Virginia coal. These coal are very abundant, and are mined and put on cars at present for ninety cents per ton, for which the iron manufacturers are paying a freight of \$3.25 per ton to the iron center of Eastern Pennsylvania. This valuable range of ore can be reached within two hundred miles, and the Allegheny coal fields of West Virginia within two hundred and forty miles from this city.

The first large indication of out-crop of the North Mountain iron ore commences at Rock Enew Springs, Frederick county, Va., and continues with the mountain in a southwesterly course past Capon Springs, in Hampshire county, etc.

The Stempton Car Shops, Lehigh county, recently resumed operations on an order for 300 coal cars from the Pennsylvania Central Railroad Company, and now are engaged in turning out 1500 heavy cars for the Central Railroad of New Jersey.

UNION MANUFACTURING COMPANY,

Manufacturers of all styles Plain and Ornamental Butts,

LOOSE PIN REVERSIBLE,

Cast Fast & Loose,

Drilled and Wire Jointed.

Japanned, Figured Enamelled, Nickel Plated, and Real Bronze Butts.

Also a full line of IRON & BRASS PUMPS,

Cistern, Well, and Force Pumps, Yard, Drive

Wells, Garden Engines and Pumping Hand Pumps,

Hydraulic Rams, etc., and all with the most modern

improvements.

NEW BRITAIN, CONN.

199 Chambers Street, N. Y.

Warehouses, 4 India Street, Boston. (Butts.)

67 Kilby Street, Boston. (Pumps.)

Send for New Illustrated Catalogue and Price List.



CHARLES E. LITTLE, 59 Fulton St., N. Y.
MECHANICS' AND MACHINIST TOOLS,
COOPERS' TOOLS & TRUSS HOOPS a specialty.

Agent for Merchant's Improved
Lewelling Machines.

Slater's and Coach Makers' Tools.
Any one in the trade not receiving my new Price List will please inform me.

C. W. BRADLEY'S EDGE TOOLS.

Butchers' Cleavers, Corn Knives, Bush Hooks, Coopers' Tools, Ship Adzes and Axes, Drawing Knives, Axes and Hatchets, Grub Hoes, Picks and Mattocks, Mill Picks, Box Chisels & Scrapers.

NATHAN WEED, 37 Chambers St., New York.

WRIGHT'S Double Acting, BUCKET - PLUNGER STEAM PUMPS.
ALWAYS RELIABLE
VALLEY MACHINE CO., Easthampton, Mass.

KANAWHA PUMP WORKS
Burlingham & Purdy,
PROPRIETORS.
Depots:
71 Camden Street,
Baltimore, Md.
103 Chambers Street,
New York.
Factory, Charleston,
West Virginia.

Manufacture the Genuine
CUCUMBER WOOD PUMPS.
Price List with description sent on application.
See wholesale price current in this paper.

The Original Inventors and Manufacturers of the **OSBORN BRIGHT METAL CAGES.**
Also OSBORN & DRAZTON improvements under twelve different patents. We are continually bringing out new and beautiful designs to meet the demands of refinement and taste.

ALVAN DRAZTON, General Agent.
MYERS MFG. CO.,
209 Centre Street, N. Y.
Manufacturers of
FLUTING MACHINES,
Stand Sad Irons, Polishing Irons, Toilet Irons, Towel Racks, &c.

SASH CHAIN.

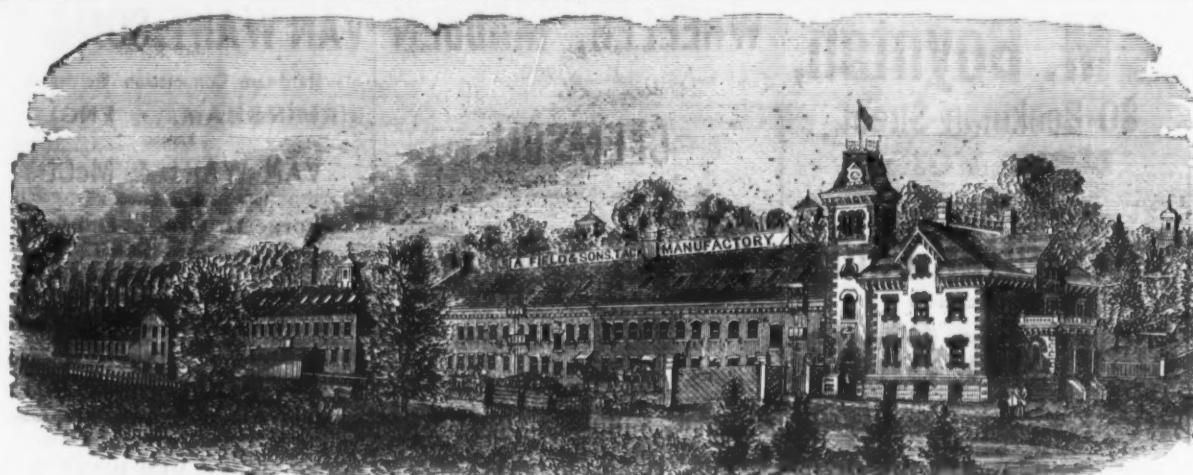
Chain and Pulley for Heavy Sash.
Manufacturers of every description of

BUILDERS' HARDWARE,
Agents for Gauthier's Black Lead Crucibles.

Agency and Depot of the **TRENTON LOCK COMPANY.**

WM. ESTERBROOK,
Wholesale Manufacturer of
Coal Hods, Fire Shovels, etc.

311 Cherry St., PHILADELPHIA.



A. FIELD & SONS, TAUNTON, MASS., Manufacturers of Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS, for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and Steel Shoe Nails, Carpet, Brush and Cimp Tacks, Common and Patent Brads, Finishing Nails
Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Paten Copper Plated Tacks and Nails
Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks.
Glaziers' Points, etc., etc.

OFFICES AND FACTORIES AT TAUNTON, MASS.

WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above named goods made from samples, to order.

BUSINESS ITEMS.

NEW YORK.

The protracted strike of the Troy iron workers is fast drawing to a close. The resumption of work at Griswold's iron mills, at the Bessemer steel works, and at Corning's shop, has heretofore been noted, and now the news is that Burden's disaffected workingmen have accepted the situation and will go to work. Prospects for the new year are evidently brightening in Troy.

The axe factory at Cohoes, owned by M. H. Jones & Co., is running to its utmost capacity, and still orders accumulate. The machinery is run by water, a full head of 21 feet turning a wheel of 200 horse-power. The company have two buildings, one 100x300 feet, one story, and the other, 40x100 feet, two stories. The products of the establishment are shipped to all parts of the United States, British Dominions and South America.

William E. Henry, stove and tinware dealer of Court street, Utica, has purchased the store No. 11 Liberty street, corner of Hotel. He will make this store the headquarters for his business after May 1, but will continue the Court street establishment, also.

NEW JERSEY.

It is stated that the Grant Locomotive Works, at Paterson, will resume work on Feb. 1. The 30 engines for the Russian government are to be finished, and arrangements have been made to keep the works running on full time. The Danforth Works have plenty of work, and the Rogers Works, which discharged a number of hands recently, did so because the companies that had ordered locomotives had not paid promptly. It is thought they will furnish the money to complete their orders now that work on them has been suspended.

Two new tug boats are being finished off by Messrs. Wood, Dialogue & Co., at Kaign's Point, for the Pennsylvania Railroad Company, for service in New York harbor. One has had her trial trip; she is 100 feet long, 20 feet beam, 10 feet hold; the engine is 26 by 26 cylinder, with surface condenser.

The vessel is fitted up in first-class style. The other is an iron tug of 82 feet in length, 17 feet beam and 9 feet hold, with engine 20 by 18 inch cylinder, surface condenser, and will also be fitted up in first-class style. This latter boat has not yet had her trial trip, but will in a few days.

In addition to the foregoing they have in progress a wooden tug 82 feet long, 17 feet beam; engine 23 inches

and 18 inches, high pressure, and are building a compound engine tug similar to the George W. Childs, 110 feet long, 22 feet beam, and 10 feet hold, which will be ready early in the spring.

The workmen in the Boonton Iron Works have been idle for some time. They had an offer to go to work at a reduction of ten per cent. in their wages, but the puddlers and rollers held a meeting and decided that they would not go to work at the proposed reduction. They offered to compromise at a reduction of five per cent., but the company would not yield, and a strike has been ordered.

The zinc works at Constable Hook has suspended operations until the stock on hand is disposed of. Seventy-five men were thrown out of employment.

PENNSYLVANIA.

The New Brighton News of the 8th says: The steel works of Beaver Falls is a fixed fact. A deed has been executed to three Pittsburghers and one Cincinnati for the ground lying between the cutlery and gas works. The proprietors will be down to-morrow for the purpose of bringing plans and specifications of the proposed buildings. They have ample capital with which to do business, and propose to erect the works at once. They will manufacture all kinds of springs, saw plates, etc., and will do a heavy business. This is thought to be one of the best factories yet brought to this valley.

The Reading Hardware Company are engaged in filling an order for 60,000 castors, the largest order for that class of goods ever filled in their establishment.

The new furnace at Bechtelsville, Berks county, will be ready to go into blast by the 1st of July.

The puddlers and boilers who have stood out against a reduction, for the last six weeks, of \$1 per ton, have come to an agreement to resume work at the proposed reduction. This agreement was arrived at at a secret meeting of the Puddlers' Union, and after a stormy discussion. About two-thirds of the puddlers were for resumption, and there is little doubt that all will finally acquiesce in the arrangement. Those in favor of resumption claimed that, however unjust the reduction is, in view of the hard times and the vast amount of suffering entailed by the idleness of the furnaces, it is a duty to accede and resume work, trusting to the mill owners for justice, or to the more favorable chances of the future. It is almost an impossibility to obtain employment at anything else, and of two evils they prefer choosing the lesser. It is thought that at least 600 furnaces will be re-lit under this agreement.

The puddlers in Pottsville who had been on a strike for several months against the reduction of wages, have resumed work, giving employment to a large number of men. It is generally understood that the rate of frages is to be the same as paid at Allentown, Bethlehem and Harrisburg furnaces, being a compromise.

The Harrisburg car shops are again without orders.

The Wister Furnace, Harrisburg, has resumed operations.

One vessel took out \$300,000 worth of machinery from Philadelphia, some days ago, to South America, and similar shipments are noticed from New England ports. The list of items embraces locomotives, air-compressors, raw mills, sugar mills, evaporators, gas fixtures, railway cars, axes, saws, sewing machines, &c.

The South American markets are worth cultivating.

All the shops of the Philadelphia and Reading Railroad Company, in Reading, and along the entire line of the road, suspended operations Tuesday, owing to difficulties in the Schuylkill coal region. This includes the car shops, rolling mills, machine shops, foundries, etc.

The Middlesex Rolling Mill has resumed operations on the sliding scale, at \$6 per ton.

MASSACHUSETTS.

A. G. Coes & Co., of Worcester, manufacture Coes' screw wrenches at the rate of from 15,000 to 20,000 a month. The business has been carried on since 1839. At present 50 hands are employed. The firm occupy two buildings, one 70x30 feet, and the other 35x35 feet, each two stories high, with L's, &c. The machinery is driven by a Swiss turbine water-wheel of four feet in diameter, the water having a fall of 14 feet. The firm also have an engine of 50 horse-power, built by Jerome Wedlock, and a Babcock & Wilcox boiler of 60 horse-power. Shipments are made to Germany, to Australia and South America, and latterly to Japan, where the introduction of American machinery on a large scale causes a demand for smaller tools of all descriptions.

CONNECTICUT.

The Woodruff Iron Works, of Hartford, are to put in the machinery of the United States steamer Enterprise, about to be built at the Portsmouth navy yard.

OHIO.

The Wellston furnaces are fast approaching completion, and will start as soon as completed. Sperry, Ritchie & Co., at Talmadge, are enlarging their sewer pipe works to double their present capacity.

The new rolling mill at Massillon is in full operation.

The Girard Rolling Mill Company are running double time, with orders enough ahead to keep running, for some time.

The puddlers at the Russia mill, Niles, have resumed work, and are turning out a large amount of muck bar.

The work of repairing the rolling mill of the Cherry Valley Iron Company, Letonia, goes steadily on, and, we presume, preparatory to an early start in the spring, providing the market shows any signs of resurrection.

The Eagle and the Hocking Valley shops, at Lancaster, are full of orders for corn-shellers and cutting-boxes, and are running extra time. They each employ from 60 to 70 hands.

ILLINOIS.

From 125 to 200 men find employment at the Emprie Machine Works, Bloomington. The company was incorporated about five years since. A two and a half story brick building, 365x40 feet, is in use, which was erected and filled with machinery at a total expense of over \$70,000. Over two and one-half million pounds of metal are annually consumed in the manufacture of heating furnaces, upon which the company is at present principally engaged. The annual product is valued at nearly a quarter of a million dollars.

CALIFORNIA.

The production of iron, says the California Alta, attracts much attention at present in various parts of California. Sacramento is about to erect a furnace, though usually such works are established alongside of a mine either of iron or coal, and the capital city has neither. The Oswego Furnace, erected six miles from Portland, Oregon, at a cost of \$250,000, with a capacity of ten tons of metal daily, is the only one west of the Sierra Nevada. The ore is hematite, containing about forty per cent. of metal.

DELAWARE.

The Tasker Iron Works, at Newcastle, have recently added four new buildings, which largely increases their facilities. These consist of bending and welding mills, each 114x233 feet; finishing mill, 150x300 feet; and a gas producing house, 40x128 feet; also, a large boiler house and two engine houses, in which are engines of 250 and 150 horse-power. The machinery is calculated to produce at present about six miles of tubing or pipes per day. The company has already expended over \$600,000 in these improvements.

Steam Hammers at the Vienna Exhibition.

Dr. Anderson, one of the British Commissioners, in his report on machine tools at the Vienna Exhibition, says: In Nasmith hammers we have made a fair display, although not equal to what we might have done had our strength been put out in full force; at the same time some of our best houses were upon the ground, and every article was very good and not easy to be surpassed. The most remarkable features were the almost entire abandonment of the old self-acting motion of the early hammers, and the substitution of new devices, and in the use of hand gear only in all attempts to show off the working. There is no real saving, as a general rule, by the self acting arrangement, because one attendant is required in either case, and on the other hand there is frequently a positive loss in the effect of the blow. By hand working with steam on top of piston, the full force can be more readily maintained until the blow is fully delivered; it is thus more of a dead blow than was formerly the case with the other system.

The fact of Thwaites and Carbutt, Bradford (progress medal), being at Vienna is enough to show that we had something worthy of England, yet disappointment was expressed that they had not sent one of their larger sized hammers. Still more interesting was the comparative working of the steam hammers. The larger hammers, as a rule, were not worked on account of shaking the building, but the smaller sizes had an opportunity of showing what they could do. Most of the machine making countries had sent hammers to Vienna. Among the rest, England had several of the best descriptions, which, for the size, were as good as any, if not better, but in the matter of working them we were far ahead. There was generally a sort of timidity in allowing the hammer to do its utmost. At the first even England showed a trace of shyness, until the Yorkshire spirit was fully roused. It then made the hammer descend with full force frequently on the bare anvil, with 60 lbs. of steam above the piston in addition to gravity, with blow after blow in rapid succession, which made the welkin ring and the surrounding building quiver to its foundation, to the intense delight of every one, and more particularly to the onlookers from the old country. Such daring confidence showed that the general soundness of the whole apparatus was equal to its work, and more especially that the hammer and anvil faces were made for real business. Those important parts were indeed thoroughly genuine; had they been made of cast iron, as is frequently the case, it would have been necessary to use a thick piece of wood, or a piece of lead or hot iron, in order to save them from injury. The great treat, however, was to observe the man who manipulated the hammer; the stern expression, and the attitude of a Cyclops, his teeth clenched, and seeming fully conscious that the honor of his country depended upon him for the time being; and it was impossible to resist a momentary feeling of pride from the knowledge that we have nothing to fear as a nation if only we are true to ourselves.

Hopkins & Dickinson Manufacturing Co., FINE METAL WORKERS,

Works, Darlington, N. J.

Hand Made Locks and Real Bronze Hardware.

NEW AND ARTISTIC DESIGNS FOR

Private Residences, Banks, Churches and Public Buildings.

THE CANADIAN BANK OF COMMERCE.

Capital - - \$6,000,000, Gold.
Surplus - \$1,800,000, Gold.

The New York Agency, 50 Wall St.,
Buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

J. G. HARPER,
J. H. GOADBY, Agents.

Gold Medal at Md. Ins. Exposition, Oct. 1874.

Endless-Lever House & Weight Mover.

Patented January 14, 1873.



Send for Circular and Price List.

THE REAMY TRUCK CO. of Baltimore Md.

Incorporated, Oct. 1874. Reliable State Agents Wanted.

OTIS PASSENGER AND FREIGHT ELEVATORS

FOR HOTELS, OFFICE BUILDINGS, STORES,
WAREHOUSES, FACTORIES, MINES,
BLAST FURNACES, &c.

OTIS BROTHERS & CO.
SOLE MANUFACTURERS,
348 Broadway, New York.

CROCKER BROTHERS, 32 Cliff Street, N. Y.

METALS.

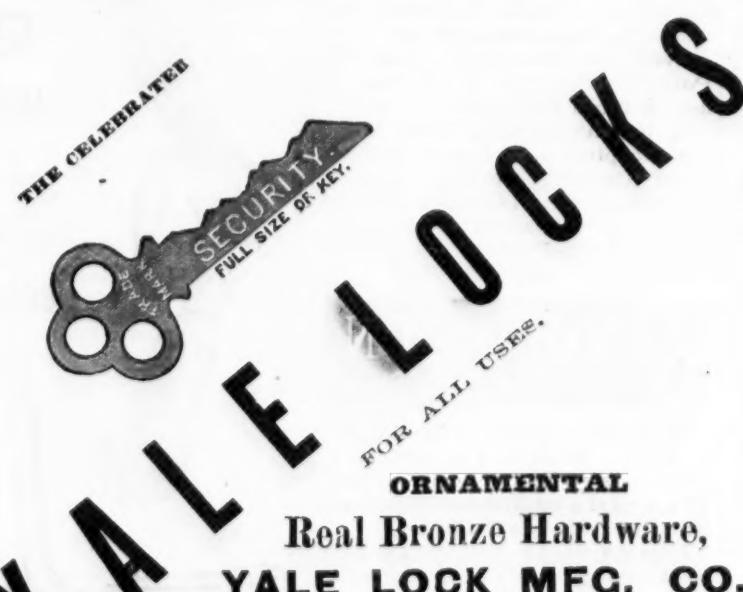
Anthracite Pig Irons,

COLD AND WARM BLAST CHARCOAL IRONS,

American and English Bessemer Irons, Iron Ores.

COPPER, TIN, &c.

Advances made on Merchandise.



ORNAMENTAL

Real Bronze Hardware,

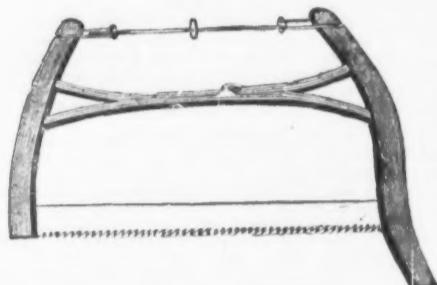
YALE LOCK MFG. CO.,

Stamford, Conn.

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GEORGE GUEUTAL & SON,
39 West 4th St., New York.
IMPORTER OF
Wood Screws, Steel in Sheets,
BAND SAWS, TOOLS FOR BRAZING, &c.
Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,
MANUFACTURER OF
Saws of all kinds.
FACTORY, WILLIAMSBURGH, N. Y.



Elliptic Forked Saw Frame.

Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webb's, marked "No. 46, Harvey W. Peace."

HARVEY W. PEACE,
Sole Proprietor & Manufacturer,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

**THE SILVER STEEL
DIAMOND CROSS-CUT SAW.**

\$1.50 Per Foot.

Patent Secured

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of SPEED AND EASE, is manufactured by E. C. ATKINS & CO., Indianapolis, Ind., who are the SOLE MANUFACTURERS FOR THE UNITED STATES. So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled. E. C. ATKINS & CO. Saw Manufacturers and Repairers, Indianapolis, Ind.

J. FLINT & CO.
Manufacturers of all kinds of Saws and PLASTERING TROWELS.
ROCHESTER, N. Y.

Dietrich's Patent Wood Saw. Guarantees the strongest, lightest, easiest to strain or tighten and best braced wood saw made; also to give perfect satisfaction.

Dietrich's Patent Double Handle Hip Saw. All will readily see the benefit of this useful invention.

J. Flint's Patent Plastering Trowels. The best made and finished Trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest. Our patent method of grinding hand saws makes them superior to any in the market. Send for Illustrated Price List.



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HARDWARE FACTORS.**

MANUFACTURERS OF:

Bonnev's Hollow

AUGERS.

Stearns' Hollow Augers

and Saw Vises

Bonnev's Spoke Trimmers

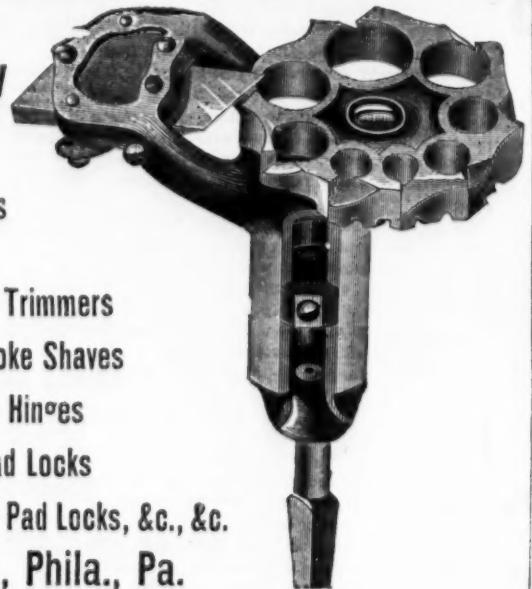
Double Edge Spoke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.



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80 Beekman Street,
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Manufacturer of

Saws of all kinds.
Also Sole Manufacturer of
LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.



Note extra steel and durability over the old V, outlined on M tooth.

I am willing and extremely anxious, on proper notice, to accept a Challenge from H. Disston & Sons, or any responsible Saw Manufacturer, and am ready to back my words with appropriate deeds and \$500 expense, if beaten.

N. B.—With Hand, Billet or Cross Cut Saw, \$500 on each.
E. M. BOYNTON.



**Putnam's Government Standard
FORGED
HORSE SHOE NAILS.**

Manufactured from the best of NORWAY IRON and warranted to give entire satisfaction.

**S. S. PUTNAM & CO.,
NEPONSET, MASS.**

**PYROMETERS
for BLAST FURNACES.**

E. BROWN'S STANDARD PORTABLE.

E. Brown's Improved
Gauntlet



Edw. BROWN,
311 Walnut St., Philadelphia.

ALSO FOR SALE
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For Baker's Ovens, Boiler Flues, Galvanizing Baths, Oil Stills, Vulcanizers, Superheated Steam.

Over 300 "Gauntlets" and 100 Portable Pyrometers are now in use at Blast Furnaces.

E. Brown's Portable Blast Gauge for the plug hole, Steam Gauges, Blast Gauges, Mercury Gauges, Recording Steam Gauges, Engine Counters, Indicators for ascertaining the Horse Power.

ALSO,

**REVOLUTION
INDICATORS.**

The Revolution Indicator is driven like a governor, either from a horizontal or vertical shaft; it constantly indicates, without the use of a watch, the number of turns per minute made by a Steam Engine.

There are many engines which have to run at varying speeds for different operations, also engines controlled entirely by hand. For such, the Revolution Indicator will be found particularly useful.

Circulars on application.

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&
CLEMSON,**
Manufacturers of Warranted Cast Steel

SAWS

of every description,
including

Circular, Shingle, Cross Cut,
Mill, Hand, Roberts' and
other Wood Saws,
&c., &c.

Cast Steel Files

of the well known brand of

Wheeler, Madden & Clemson.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

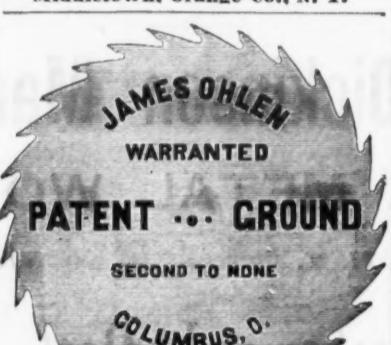
97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

Manufactured from

BEST NORWAY IRON,
by BRUNDAGE & CO. Sold by
WHEELER, MADDEN & CLEMSON

Middletown, Orange Co., N. Y.



VAN WART, SON & CO.

Hardware Commission Merchants,
BIRMINGHAM, - ENGLAND,
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VAN WART & McCOY,
184 & 186 Duane Street, N. Y.

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At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for

John Rimmer & Son's Celebrated

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Agents for

Seydel's "Ashante" Pocket Hammock

OSCAR IRVING VAN WART & CO.,
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2 South John Street, LIVERPOOL.

SCHOLEFIELD, GOODMAN & SON.

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New York—Edward Frith, 16 Cliff Street.
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New Orleans—R. Rhodes, 71 Camp Street.

Montreal—J. J. Evans 14 St., John Street.

JOHN MAXHEIMER,

Patented,
June 8, 1862; April 6, 1869
Dec. 23, 1873 Jan.
20, 1874.

Manufacturer of

FULL SIZE OF
WIRE CONNECTION

JAPANNED and
PATENT EUREKA

Bright Metal
BIRD CAGES.
Nos. 247 & 249 Pearl Street
NEW YORK.

H. CARTER,
290 PEARL ST., NEW YORK.



Manufacturers of and Dealers in all descriptions of
Moulder's and Plasterers' Tools, and Dealers in
General Hardware, Gilded Copper Weather Vanes,
CARTER'S PATENT CARRIAGE LIFTING JACK, &c.

Backus's Patent Bit Brace

AND

Angular Extension
BORER.

Q. S. Backus,

SOLE MANUFACTURER OF

ANGULAR EXTENSION BORER.

Salesroom, 82 Chambers St., N. Y.

This tool can be used in any brace, at any angle, and also for straight work. Is the best and most convenient tool of its kind ever offered to the public. Eight thousand sold the first year.

Also Manufactures the Straight Extension

Backus's Pat. Improved Bit Brace.



The socket is arranged so that the strain does not come on the jaws, but on the square hole in the shank of the bit. The jaws attached to the sleeve hold the bit firmly in the square, and center it true. It is made of wrought iron. The general finish of the stock is good. Its appearance is neat. Mechanics who have used it unanimously speak well of it, and offer it to all others, and we offer it to the trade as the strongest, most simple, and quickest operating brace in the market, and at a very low price. The number of inches of sweep corresponds with the commercial number of the set.

Cutlery.

John Russell Cutlery Co.,

FACTORIES AND OFFICE,

TURNERS FALLS, MASS.

Manufacturers of

TABLE CUTLERY,
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IN GREAT VARIETY.

Extra Hard Rubber Handle Table Cutlery of our own Manufacture.

Fine Ivoride Handle Table Cutlery, very White and Durable.

Sample Office, 77 Chambers St., N. Y.

NORTHAMPTON CUTLERY CO.,

Manufacturers of all kinds of

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Cook, Butcher, Shoe and Hunting Knives. Sole Agents for Rogers' Cutlery Co., Plated Forks and Spoons.

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MANUFACTURERS OF

Pen and Pocket Cutlery, Solid Steel Scissors, F. & L. Shears, Razors, Russia Leather Straps, Oil and Water Hones, &c.

Sole Proprietors of the renowned full concaved patent

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Also Agents for the BENCALL RAZORS.

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PETERS BROTHERS,

AWARDED THE MEDAL OF MERIT.

LARGE STOCK OF

VIENNA 1873.

American, German, English Pen, Pocket & Combination Knives.

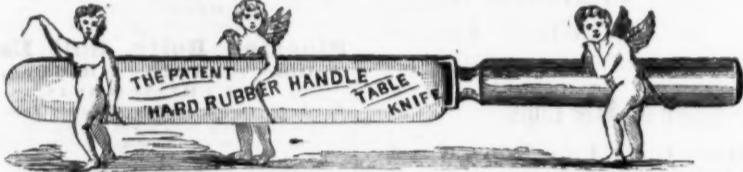
Scissors Scissor Cases

Razors, Hones, Straps, &c., Heinrich Tailor Shears, &c.

88 Chambers Street, New York.

TABLE KNIVES AND FORKS OF ALL KINDS,

AND EXCLUSIVE MAKERS OF



And the "Patent Ivory" or Celluloid Knife. These Handles never get loose, are not affected by hot water, and are the most durable knives known. Always call for the Trade Mark "MERIDEN CUTLERY COMPANY" on the blade. Warranted and sold by all dealers in Cutlery, and by the MERIDEN CUTLERY CO., 49 Chambers Street, New York.

THE MILLER BROTHERS CUTLERY CO.,

Manufacturers of

PATENT FINE PEN & POCKET CUTLERY

WEST MERIDEN, CONN.

The only Knives made that are put together in such a manner that there is no strain on the cover or frail part of the knife. We warrant our knives equal in cutting qualities and workmanship to any made, and are acknowledged by English makers as the Best American Knives. We also make

NICKEL & SILVER PLATED POCKET KNIVES

which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other knife. Orders filled from the factory or by

J. CLARK WILSON & CO., 51 Beckmar Street, N. Y.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of Shank, Socket Firmer, and Socket Framing Chisels.

PLANE IRONS.

Gouges of all lengths, and circles beveled inside or outside. Nail Sets, Scratch and Belt Awls, Chisel Handles of all kinds. Orders filled promptly; generally same day as received.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST MATERIAL.

WALKILL RIVER WORKS,

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Wood's Hot Water-Proof Table Cutlery.

Handsome, Cheapest, most Durable Cutlery in use. Wood's Celebrated Shoe Knives. Butcher Knives a specialty.

WOODS CUTLERY CO., Antrim, N. H.
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AUGUST TILLMES. I. H. CLAUSEN.

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Wholesale Cutlers.

Sole Agents for Wm. Clauberg's Warranted Pen and Pocket Knives, Razors, Scissors, &c.

SPECIALTY: Full Concaved Razors, Wostenholm's Pocket Knives.

Razor Hones, Edge-Letter Razor Straps, Wade & Butcher's Razors, and Cutlery in general.

TRADE MARK.

Aaron Burkshaw.

PEPPERELL.

MASSACHUSETTS.

AMERICAN PEN AND POCKET KNIVES,

MANUFACTURED BY

AB

MASSACHUSETTS.

TRADE MARK.

JAMES GLANING & CO., No.

115 Queen St., Philadelphia.

What the proprietors claim for the Eagle Packing:

1. Its general adaptation to all purposes for which packing is used.

2. Its durability. It will outlast any other article in use.

3. Its cheapness. It can be furnished to

the consumer at a lower rate than any other packing

and midsummer.

Having devoted my space to

Cutlery.



PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Jan. 18, 1875.

The marked improvement in general business during the last week, and especially in pig iron, indicates that the long looked-for turn in the tide has come. The general feeling among business men of all branches seems to coincide with this opinion, also. Many of the wholesale houses and manufacturing firms are already putting their travlers on the road, and look for the opening of a large spring trade very shortly. So far as pig iron is concerned, there has been more business done during the week just closed than probably in any one month of 1874, and the indications are that it is but the beginning of a healthy and steady demand, which, without any sharp advances in price, will give a gradual appreciation until a point is reached which will afford a fair margin to the producer and a reasonable profit to consumer. In view of the present extremely low prices, the remark of the president of a prominent furnace company, during the week, that "iron is high enough now" would seem rather paradoxical. It is, however, undeniably the case that a very much greater reduction in the cost of producing iron has been made than is generally known. The great reduction in labor, in ore and in cost of all other materials save coal, has no doubt so decreased the total cost as to admit of a small profit at even present prices in the case of furnaces favorably located. Doubtless there are many furnaces unwise located which will never be relighted, but in all human probability every furnace properly situated for stock and market will find profitable occupation before July, 1875. The fact that pig iron has declined from \$35 per ton at the close of 1873 to \$25 per ton at the close of 1874, or a decrease of 27 per cent. in one year, and that rails show in the same period a similar decrease of 23 per cent. in price, should satisfy both capitalists and consumers that prices cannot be lower, and that any demand, as in the present instance, must create a legitimate advance. A feeling is evident in trade circles that there is a speculation in iron, as undoubtedly there is, and now would seem to be the time to test the availability of Mr. Samuel's "warrants" for purchase and sale.

On the principle that the man who has no money to bet invariably can name the winning horse, perhaps an impudent correspondent may indicate with some degree of certainty the course of the market for the next six months. Taking the value of No. 1 foundry iron now at \$26, a fair average, with a strong disposition to ask \$27, it is no more than reasonable to suppose that under a revival of industry the same grade of pig will have advanced to \$31 by July next. Reasons upon which this view is based will be given below. Presupposing, therefore, the purchase of 1000 tons of pig iron stored in one of the warehousing company's yards, or, more properly, of the warrant representing this iron, the adventure would represent the following items of cost and profit, admitting the transaction to be effected for net cash, viz.:

January 18th, 1875.

1000 tons No. 1 foundry iron, at \$26 per ton, \$26,000.00

Less broker's commission, 1 per cent. 260.00

Yard charges, receiving and delivery, including weighing, in and out, 25 cents per ton. 250.00

Storage first month, at 10 cents per ton. 100.00

Storage five months, at 5 cents per ton, or 25 cents. 250.00

Total cost at end of six months. \$26,900.00

Add interest on above for six months at 7 per cent. 943.60

July 18th, 1875.

1000 tons No. 1 foundry, at \$31 per ton. \$31,000.00

Less broker's commission, 1 per cent. 310.00

Storage first month. \$31,690.00

Deduct cost and expenses. 27,903.60

Net profit. \$2,796.40

Being nearly 10 per cent. on the investment for six months, or at about the rate of 20 per cent. per annum. At the same time, it is to be noted that the charge for interest in this adventure is not a legitimate one, since the warrant purchased is collateral for the purchase of 500 tons more iron at the same figure, which, as may easily be computed, would, after paying interest on the loan, give a profit of 5 per cent. additional, thus making the total profit on the venture represent 15 per cent. for the six months.

Surely this, with such a legitimate security against loss, and with no possible depreciation in quality while held, offers strong inducements. As to the reasons upon which an advance may be expected, the following will be generally accepted as sound. First is the well known fact that no branch of consumers, railroad, agricultural or manufacturing, have purchased at all for twelve months beyond immediate wants, and all are bare of iron or its products. Second, is that the Northwestern States and a large portion of the Southern have been, during the past ninety days, in receipt of large sums in payment of cotton, cotton and hog crops, with a surplus yet to market, and that the people of these States are now in funds to purchase the tools, implements and other iron products of which they are bare. Moreover, in several instances, new railroads in the States named have secured foreign capital, and will at once proceed to construction. Third, and probably most important directly to an advance in pig iron, is the very strong probability, almost amounting to a certainty, that the bond endorsing the interest of the bonds of the Northern Pacific and Texas & Pacific Railroads will speedily become a law, as it is strongly urged from nearly all sections of the country, and favorably received in Congress. This would, in itself, furnish a demand for all the iron which can be offered up to July, when considered in addition to the natural demand. Fourth and last, the necessities of the country demand an increased revenue so forcibly that the restoration of the 10 per cent. taken off the duty on numerous articles two years since is almost positively certain. This closes American markets practically to foreign iron, and gives a demand for home products which it will require the entire present capacity to fill. With these reasons, based on certainly good grounds, there can be little doubt of an advance of \$5 per ton in pig iron between now and midsummer.

Having devoted my space to

the great reservoirs at Montsouris for the reception of the waters of the Yonne possess great interest for the hydraulic engineer. It will be remembered that in July last a portion of the arched roof gave way. The accident has now been repaired, and the water will be let into the upper reservoir in a few days. The arches have been reconstructed as before—that is to say, two bricks thick—but the piers and supporting walls have been strengthened, and the vaulting supported in such a manner that should one or more arches fall in they will not carry the rest with them. The area of the reservoir is 34,000 square meters, and they are two stories high, with an enormously thick wall in the middle of the whole, which divides the reservoir into four chambers, two below and two above. All the masonry of the lower chamber has been flushed for a long time, but the conduits and pipes for the distribution of the water remain to be executed. The upper chamber, of which the vaultings have been reconstructed, and which has an area of 17,000 square meters or tons of water, will be the first filled. The hundred arches which cover this chamber are being covered gradually with mold to the depth of 10 inches, and when this is done, and the arches show no tendency to give way, the mold will be sown with grass seed. The quantity of earth will be about 2000 cubic meters. Several hydrants are placed around the edge for the purpose of irrigating the grass. The second upper chamber is now being constructed, and is about one-quarter flushed. Around the reservoir earth is now being thrown up to the height of the roof of the lower chamber, with the double view of adding support to the walls and of keeping the water within fresh. At one of the angles of the main structure rises a structure 40 meters square, and with walls two meters thick. This is the receiving chamber, and has been for some time in use. Its capacity is about 30 square meters by 4 meters deep. The bottom and sides are covered with bluish-white tiles, and the water is so pure and translucent that a motto inscribed on the tiles at the bottom is plainly visible. At the bottom of this smaller reservoir may be seen the orifice of a pipe 1.65m. in diameter, which will carry the water to a point 5 meters above the level of the ground; opposite to this is another pipe of the same dimensions, which, when there is an overflow of water, will carry it to the main sewers. Just in front of this receiver are three pipes, two of them 90 centimeters in diameter, and the third somewhat less, bound together by means of a cast iron hood, and fitted each with valves. One of these will serve to fill the upper chamber of the main reservoir, a second the lower chamber, and the third, and smallest, already supplies the highest portions of Passy with water. At the base of the recipient chamber is a telegraphic office, which is in communication with another at the reservoirs of Arcueil, with the prefecture of police, and several other public establishments, to aid in the regulation of the whole service of the city. The public is admitted to view the recipient chamber, and the purity of the water, which will shortly supply a very large proportion of the population, is a constant object of admiration.

Patented Steam and Hydraulic, April 1, 1868.



EAGLE PACKING,

Of various sizes for ENGINES and PUMPS,

manufactured by JAMES GLANING & CO., No.

115 Queen St., Philadelphia.

What the proprietors claim for the Eagle Packing:

1. Its general adaptation to all purposes for which packing is used.

2. Its durability. It will outlast any other article in use.

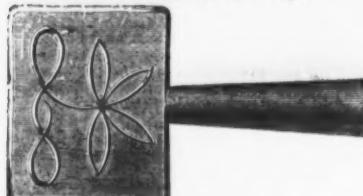
3. Its cheapness. It can be furnished to

the consumer at a lower rate than any other packing

and midsummer.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.



Established 1850.

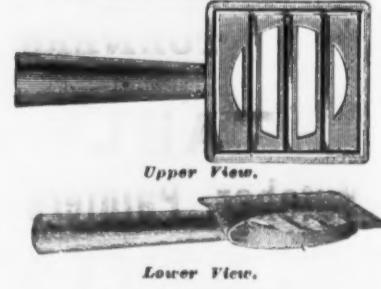
No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.



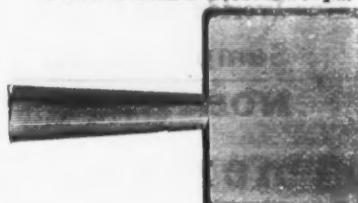
Patent Cross Bar Steps.



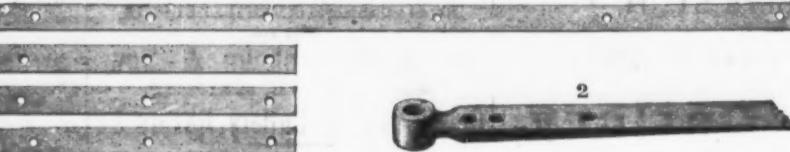
Upper View.

Lower View.

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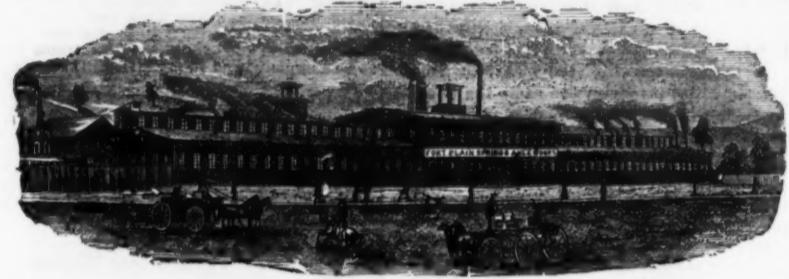
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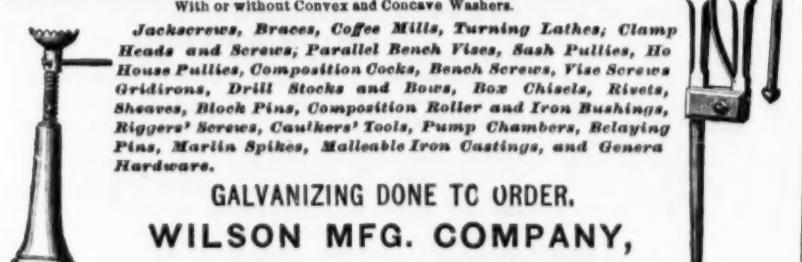
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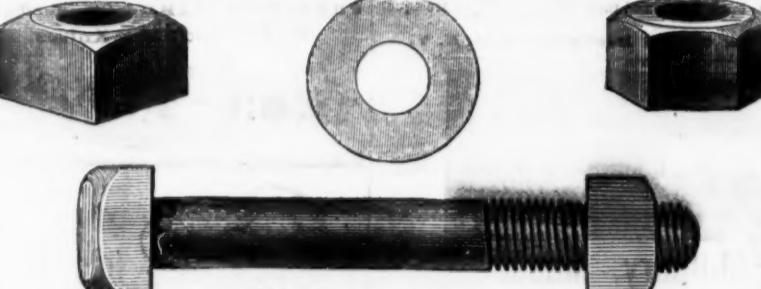
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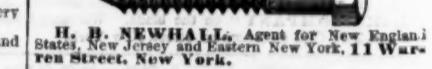
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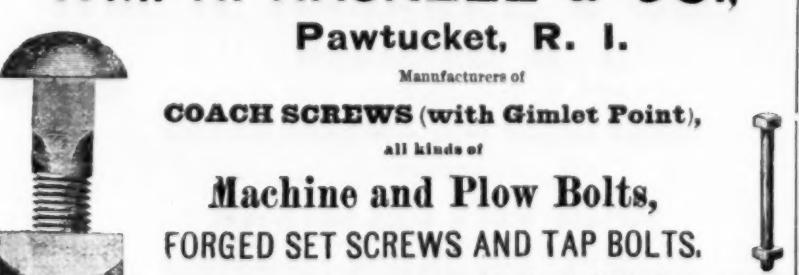
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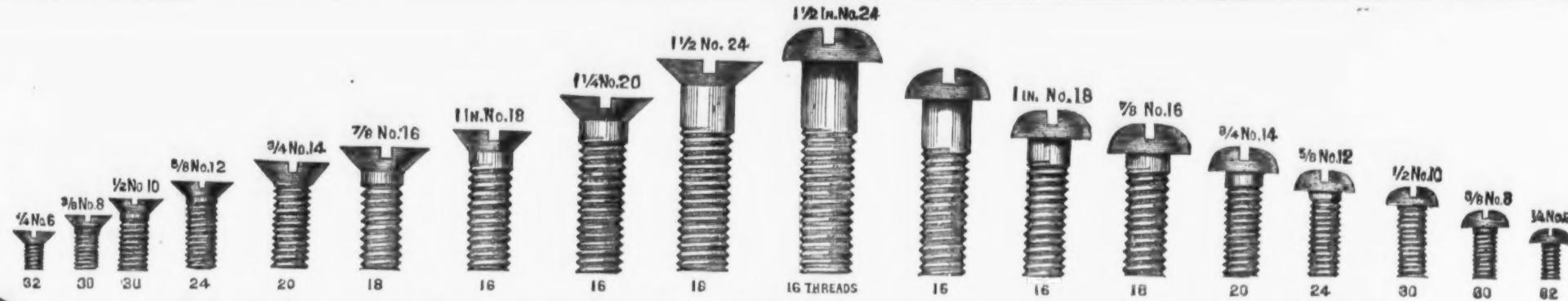
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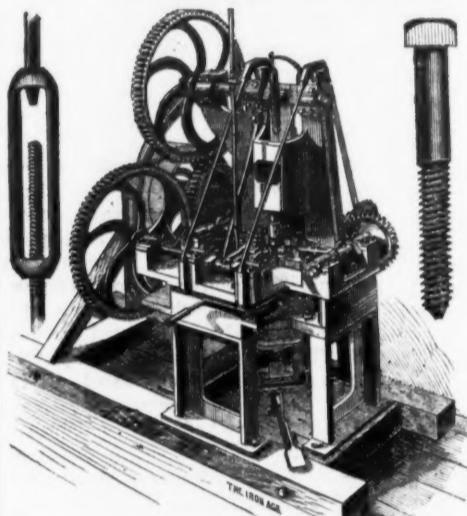
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The Iron Age.

New York, Thursday, January 21, 1875.

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JAMES C. BAYLES - Editor.
JOHN S. KING - Business Manager.

NEW YORK, January 21, 1875.
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Office of THE IRON AGE.
WEDNESDAY EVENING, Jan. 20, 1875.

The past week has witnessed a considerable revival of speculative activity in the financial markets, with sudden and wide fluctuations in stocks. The money market continues easy at 2½ @ 3½ per cent. to borrowers on call, while prime commercial paper sells at 5 @ 6 per cent. The following is comparison of the bank averages of the past two weeks:

Jan. 9.	Jan. 16.	Differences.
Loans..... \$396,157,900	\$382,973,900	Dec. \$1,185,200
Specie..... 23,223,100	23,490,600	Incl. 268,500
Leg. Ten..... 50,891,100	55,271,100	Incl. 4,480,000
Deposits..... 291,613,900	296,896,500	Incl. 5,283,700
Circulation..... 34,407,000	34,386,900	Incl. 115,700

Telegraphic advices from Washington state that applications for new national bank currency to the amount of \$3,000,000 have already been made to the Treasury, and that these applications come from the old banks in the Middle and Eastern States. With these applications granted, the practical effect will be to create, first, a demand for United States bonds to pledge an security for the notes issued, and, second, to cause a contraction of the legal tender circulation to the amount of 80 per cent. of the bank notes issued. As bank credits (first loans and their deposits) can be created to the extent, taking all banks together, of five times the amount of legal tenders or lawful money held by the banks, the operation of the new law will work a contraction of that class of currency used in wholesale operations, and an increase—to only one-fourth, however, of that amount—of the bank note currency used to facilitate the exchanges of retail trade. As the large cities use most of the former kind of currency, the new law means contraction to them when the withdrawal of legal tender notes gets to the point of diminishing the stock of legal tenders in the banks.

The gold market has ranged between 111½ and 112½. The following shows the extreme daily fluctuations of the premium:

Highest.	Lowest.
Thursday..... 112½	112
Friday..... 112½	111¾
Saturday..... 112¾	112
Monday..... 112½	112¼
Tuesday..... 112½	112¼
Wednesday..... 112½	112¼

In the stock market the dealings have been large, and a good deal of excitement has existed at times. The principal dealings of the week have been in Western Union, Lake Shore, Northwestern, Ohio and Mississippi, and Atlantic and Pacific Telegraph.

Government bonds continue strong. State bonds are also strong, with the exception of Tennessee, which have become weak, on the rumor of a default in the July interest. Railway mortgages are strong and in good investment demand.

The following tables show the foreign trade movements for the week:

IMPORTS.	1873.	1874.	1875.
Total for week..... \$11,929,162	\$7,712,254	\$7,304,672	
Prev. reported..... 5,345,106	7,254,194	5,803,864	

Since Jan. 1..... \$16,630,968 \$14,966,378 \$13,008,536

Included in the imports for the week are:

Quant.	Value.
Anvils.....	\$2,387
Brass goods.....	28,238
Bronzes.....	3,684
Chains and anchors.....	51,178
Copper.....	88,339
Guns.....	121,17,976
Hardware.....	115,11,119
Iron, pig, tons.....	250, 5,674
Iron cotton ties.....	1,157, 4,485
Iron, other, tons.....	13, 1,467
Lead, pigs.....	3,988, 20,161
Metal goods.....	359, 23,185
Nails.....	14, 5,620
Needles.....	8, 826
Old metal.....	2,007
Platedware.....	4, 476
Pew caps.....	10, 9,230
Saddlery.....	2, 300
Steel.....	1,977, 27,185
Tin, boxes.....	21,830, 158,339
Tin, 476 slabs.....	450,812, 87,333
Wire.....	50, 1,619
Zinc.....	71,373, 1,766

EXPORTS EXCLUSIVE OF SPECIE.

1873.	1874.	1875.
Total for week..... \$4,586,333	\$5,960,133	\$4,659,778

Prev. reported..... 5,345,106
 7,254,194 | 5,803,864 |

Since Jan. 1..... \$12,554,665 \$15,374,522 \$13,132,930

EXPORTS OF SPECIE.

Total for the week.....	\$3,328,069
Previously reported.....	1,616,131

GENERAL HARDWARE.

The trade are now looking for the arrival of Western buyers, who are expected daily, but as yet only one or two have made their appearance. Travelers are now going out, and the spring trade must soon begin.

The meeting of the Western Hardware Association adjourned last Wednesday evening, after a two days' session, which was entirely private, the only action of which we have information being a resolution that the proceedings should not be made public in any form. The next meeting of the association will be in Cincinnati, next October.

The Meriden Cutlery Co., No. 49 Chambers street, have just issued the following revised price list of Table and Pocket Cutlery, Shears, Scissors, Plated Forks and Spoons, &c. The following are their discounts:

Table Cutlery, all kinds..... 25%

Pocket Cutlery..... 25%

United States Shears and Scissors..... 20%

Barnard's Patent Shears and Scissors..... 10%

Case Goods and Cases..... net.

Plated Forks and Spoons at Manufacturers' current rates.

In their circular they say:

Since issuing our last price list important additions have been made to our large variety, embracing styles adapted to any trade and all markets.

Special attention being given as in times past to the finer descriptions of goods expressly for Hotels, Restaurants, Steamships, as well as family use.

All goods having our trade mark, "Meriden Cutlery Company," are fully warranted.

They solicit orders by mail or otherwise.

Table and Medium, for 1 dozen Kulives, each.

Knife and Fork Cases, for 1 dozen, each, Medium or Dessert.

Cutter Cases, 27 or 28 pieces.

Nut Pick Cases, 12 pieces, \$1.00; 6 pieces, 75¢; 12 pieces, with Cracks, \$1.25; 6 pieces, with 1 Crack, 75¢.

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BARNARD'S PATENT SHEARS.	
Straight Trimmers—Glazed Finish.	
11 in. Straight	\$13.00
10 in.	10.50
9 in.	9.00
8 in.	7.50
7 in.	6.50
6 1/2 in.	5.00
6 in.	4.75
Button Hole Cutters.	\$6.00
No. 1 Button Hole Cutters	4.75
Lamp Trimmers.	\$4.25
Strait Trimmers—Crocus Finish.	9 in. \$9.50
8 1/2 in.	9.00
8 in.	8.50
7 1/2 in.	8.00
7 in.	7.50
6 1/2 in.	7.00
Ladies' Scissors.	\$4.75
6 in. Ladies' Scissors	4.75
5 1/2 in.	4.00
5 in.	3.50
4 1/2 in.	3.50
Pocket Scissors.	\$4.00
4 in. Pocket Scissors	4.00
5 in.	4.50
5 1/2 in.	5.00
Barbers' Shears.	\$9.00
8 1/2 in. Barbers' Shears	8.50

We keep the only complete stock in New York.

UNITED STATES STEEL SHEARS.

Made of best Shear Steel and every pair warranted.

Glazed Finish.

No. 5, 4 inch round or sharp point.

9, 4 1/2 in.

10, 5 in.

11, 5 1/2 in.

12, 6 in.

13, 6 1/2 in.

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triets, and they must, therefore, needs give in very soon. In point of fact, they have already begun to yield, the men at Dowlais and Rhymey having resumed work to-day on the masters' terms.

THE NEW WAGES SCALE.

A new scale of wages has just been fixed for the men engaged in the finished iron trade of England only, to be in force during the next three months. Puddlers are to be paid at the rate of 9/- per ton, and other men on that basis. Generally speaking, this is a reduction of 1/- per ton, the calculations having been arrived at from the average selling price of finished iron in South Staffordshire and Cleveland for the past quarter, such price being certified to be £9.10/10 per ton, or 10/- lower than is the quarter ending at Michaelmas Day, 1874.

THE ANNUAL TRADES UNION CONGRESS.

This annual "Talkee" will assemble at Liverpool on January 12. The programme of subjects for discussion is as under:

After the Parliamentary committee have presented their report, one will be submitted relative to a new constitution of the congress. The congress will discuss the Criminal Law Amendment Act, Masters' and Servants' Act, Conspiracy, Trade Union Act, Compensation to Workmen Bill, Truck Bill, Merchant Shipping Bill, summary jurisdiction of magistrates, Small Penalties Act, the question of trial by jury, and the qualification of jurors. Then comes the question of the representation of labor in Parliament. This is to be followed by a discussion on the necessity of providing a sufficient staff of efficient and practical inspectors to enforce the Factory and Workshops Regulation Acts and the advisability of securing a number of qualified working men to act as inspectors.

The last subject is the application of the Arbitration Act in labor disputes. On the subject of the federation to trade unions, the Parliamentary committee say that they were instructed by the last congress to issue an address relating thereto, but they had not been able to agree upon a satisfactory basis for any such federation. They now believe that the first step toward a fed ration will be the adoption by congress of a definite constitution based upon the foregoing rules. They recommend, as a second step toward federation, that the local trades and branches of trade in every constituency form themselves into trade councils, for the purpose of consultation, mutual help, and concentrated political action in reference to the several questions agreed upon by congress.

THE SCOTCH IRON TRADE—YEARLY REVIEWS.

I am suffering from an *cobarras de richeesse*. I am flooded, so to speak, with statistics, and am, consequently, compelled to use the pruning knife somewhat freely. At the same time I beg to thank those gentlemen who have been good enough to forward their reviews to me on your behalf, and to state that it will, at all times, be extremely satisfactory to peruse (even if I cannot, owing to want of space, use) all they may forward. Messrs. William Colvin & Co.'s annual resume, Dec. 31st, 1874, has the following

"The extraordinary prosperity through which the iron trade has recently passed, culminated in the spring of 1873. Throughout the remaining part of that year, and during 1874, the trade has been more or less in a transition state, and the amount of business transacted has been restricted within narrower limits than we have experienced for many years. In January the price opened at 100, but it gradually receded until about the middle of February, when it touched 90 per ton. The natural range of prices from that time until the end of the year seems to have been from 90 to 80, but exceptional speculative operations sometimes caused unwarrantable fluctuations, as in April, when the price declined to 71 1/2, and again in June, when it was forced up to 105. The production from an average of 96 furnaces has been only 806,000 tons, which miserable result has been caused by disturbances in the labor market. The inexorable laws of supply and demand made it evident that extreme prices had for a time passed away, but notwithstanding this, the laboring classes would not accept the altered position without a protracted and futile struggle. A large number of furnaces were consequently put out of blast about the middle of March, and it was not till the month of October that the works were again in full operation. There are now 121 furnaces in blast, which, with an ample supply of material, are working more satisfactorily than they have done for some time past. The consumption of Scotch pig iron, 193,000 tons in Foundries, and 124,000 tons in Malleable works, is decidedly small, but this quantity has been supplemented by about 300,000 tons of iron, which consumers here have been able to import from the North of England at prices much under those current here for Scotch brands. The shipments show a great falling off, even compared with the diminished returns of last year. The uncertainty regarding prices has restricted the demands of the various markets within the narrowest possible limits; and the state of trade in the United States of America has caused a marked decrease in the shipments thither. The stock in Scotland amounts to only 96,000 tons, 34,000 tons in storekeepers' yards and 62,000 tons in the hands of the makers. Only twice during the last 25 years have the annual returns shown such a reduced stock, and it is worthy of remark that, in this respect, the other iron districts are much in the same position as Scotland. The shipbuilders on the Clyde still maintain their high reputation, and have put a large quantity of work through their hands during the past year. The prospects for the immediate future are not, however, so bright as usual. Without presuming to forecast the future, we may reasonably indulge the hope that, during the coming year, the production, which has steadily fallen off for some time, and which is now only two-thirds of what it was in 1870, may again show a marked increase; and that, with remunerative, although comparatively moderate, prices, we may have a larger and more satisfactory business during 1875 than we are enabled to chronicle at this time."

CURRENT PRICES OF SCOTCH PIG IRON.

Messrs. John E. Swan & Bros., ordinary weekly circular gives the following figures acent Scotch pig iron:

Glasgow Brands.	Prizes.		
	No. 1	No. 2	No. 4
Gartsherrie.....	14	12	90
Celtic.....	12	9	80
Summerlee.....	6	5	80
Langloan.....	4	3	80
Govan.....	4	3	78
Calder.....	6	5	78
Beechmore.....	5	3	78
Carnbroe.....	4	2	80
Wishaw.....	2	1	78
Monkland.....	6	3	78
Chapelhall.....	6	3	78
Clyde.....	6	1	78
Quarter-Clyde.....	4	1	78

* f. o. b. Glasgow, 1/- per ton, extra.
Glasgow Warrants, 2-5 No. 1; 2-5 No. 2, g. m. b., 2/-.

WEST COAST BRANDS—f. o. b. Ardrosson.

	7	9	87.6	80.6	81
Glengarnock.....	7	9	87.6	80.6	81
Ardoe.....	4	1	81		
Eldon.....	6	2	80		
Lugar.....	4	0	84		
Muirkirk.....	3	0	79	76	80
Portland.....	1	3	6		
Dalmellington.....	6	2	8	78	74

EAST COAST BRANDS—f. o. b. in the Firth.

	3	1	4	87.6	78	73.6
Kinnel.....	3	1	4	87.6	78	73.6
Almond.....	2	1	3	82.6	72	6
Caron (Soleil d').....	5	1	6	90		
Orduy (.....	5	1	6	85		
Lochelly.....	2	2	4	89	77	6
Lumphanians.....	0	2	2	89	77	6
Bridges.....	0	2	2	89	77	6

Furnaces in blast in Scotland. 1874-1875.

Pig iron for ballast is still 60/- per ton delivered alongside ship in the Forth or Clyde. Freight are in the main, unchanged. Shipments last week were under 9000 tons. Canals' stock is now 36,000 tons.

sence of orders for springs and rails, numbers of men had to be discharged. These are, for the most part, still wanting employment, and are, in some cases, in much distress during the present inclement season. In the file and saw manufacturers business gradually grew worse after midsummer has gone by, and prior to the close of work for the Christmas holidays numbers of men were discharged; they are being supported by the trades unions. With the lighter branches of the Sheffield industries I have not space to detail at present.

The prospects of the various local trades above alluded to cannot be said to be of the brightest. They are idle at present, and when work is resumed next week, as it will be in most of the leading establishments, it is by no means unlikely that a curtailment of working time will have to be resorted to. It is felt on all hands that much depends upon the American market. If the United States can afford to buy in the spring, we may do well here; if not, a long period of depression lies before most of the staple occupations of this town, particularly steel and cutlery.

Owing to the holidays, very little business has been transacted. Out door labor would, in any case, have been put a stop to by the exceedingly severe weather. On Wednesday there were 18 of frost. The slate makers are doing a tremendous stroke of business, and in a few days have cleared out all the accumulated stock of the past four years.

SOUTH STAFFORDSHIRE AND BIRMINGHAM.

The Staffordshire iron trade is dull, and there have been few sales, owing to the holidays. Much interruption of local supplies has been caused by the icebound condition of the canals throughout this district, in common with others in various parts of the kingdom. Keen curiosity is expressed as to the course finished iron will take on the quarter days, but it is already stated that neither Messrs. Barrows nor Earl Dudley will put down their figures lower than 411. Other producers will probably reduce iron £1, and unmarked iron 10/- per ton.

The hardware industries are quiet, but bars done pretty well during the year just closed. The Birmingham Post, in its annual review, states that "Among our local manufacturers, those employing brass, copper and white metal have been best off as a rule than the iron hardware industries"; but to this rule an exception must be made in the case of the edge tool manufacturer, which has been specially favored by the influx of orders—last winter in connection with the Indian fanning works, and subsequently with the extension of tea plantations in the North of India. The Central and South American trade in edge tools has also been very satisfactory; and the colonies, especially Australia and the Cape, have taken their full proportion of agricultural tools and implements. Metal rollers have been very busy throughout the year, not so much in the production of metal sheeting—though that trade has greatly improved—as in rolling sheets for the brass founders, tube and wire drawers, and ammunition makers, all of whom have been exceedingly active. The cabinet brass foundry trade has been supported chiefly by home and colonial orders. Brass and copper tube drawers have been occupied in ministering to the wants of railway companies as regards locomotive tubes; and of the chandelier and brass bedstead makers, the latter of whom are the special consumers of taper tubes. The cartridge and percussion cap branches, which have undergone considerable extension in the course of the year, have been supported chiefly by military contracts for the German and Spanish governments. Good contracts for rifles for the German, Russian, Egyptian and Japanese governments have also furnished us with some employment at some of our local small arms factories; but the birding gun branch, owing to the slackness of American demand, has been comparatively dull. The wrought iron tube trade has been seriously depressed, owing to the falling off in German orders and the development of German competition, but there has been a partial recovery of late in the demand for the common descriptions of goods for gas fitting purposes. Galvanized goods were in very quiet demand in the early part of the year, and owing to the keenness of competition in the trade prices were unduly depressed, but in this branch also we note a marked recovery within the last month or six weeks. Jewelers have been moderately well engaged in medium goods, but there has been no approach to activity in any branch, and high class wares have been in comparatively slack demand. The electroplated trade, notwithstanding a considerable advance of prices, necessitated by the scarcity and consequent dearth of nickel, attributed mainly to the German coinage requirements, has been comparatively active both for home and export. The iron wire trade has been adversely affected by Belgian competition. Hollow ware founders, and especially the makers of tinned and enamelled hollow ware, have found a ready market for their wares, both at home and in the colonies. Tin plate workers have been fairly well employed, alike in bright and japanned or painted goods. There has been well sustained activity at the local manufacturers of cut nails and washers, screws, tacks, nuts and bolts, &c.; and the various rolling stock works in our vicinity have been kept in full operation. Steel pen makers have been especially busy during the latter part of the year."

SOUTH WALES.

There is very little strictly trade news from either South Wales or Monmouthshire, the works being at a standstill, and the all absorbing topic of conversation being the great strike, to which I have referred at some length in my opening remarks. I may add, however, that we have just received a telegraphic intimation that the strike is likely to be over in a week or so, and that the owners are certain to have victory on their side.

THE METAL MARKETS AND REVIEWS.

The metal markets have been listless during the past week owing to the holiday season, but prices have been well upheld as a rule. Tin appears, at last, to be going up, and lead is held very tenaciously by sellers. Messrs. Von Dahlen & Noy say: "Copper.—Very little business has been done, and prices are without change. Good ordinary bars are quoted £83.10/- to £84 cash, and for forward delivery. Nothing whatever done in Australian, prices quite nominal. Lead maintains its position at £24. Spelter quite nominal, at £24 for Silesian. Quicksilver.—Small sales of second-hand parcels at £24."

Messrs. Vivian, Bond & Watson's circular has the following notes: "Copper.—Since the 20th ultimo Chili bars have declined in value about 5/- per ton. This has been brought about by the action of speculators, and the continued heavy shipments from Chili. The transactions have been comparatively very moderate, at from £86 to £81 per ton. In furnace materials, regulus to arrive has brought 17/- to 16.6/- per unit, and Chili ore 16.6/- to 16.3%. The Swansons' ticketings of ore have gone as follows: December 8, 1482 tons ore; average produce, 18.5% per cent.; sold at an average of 17.1% per unit. Cape ore, 25.1% per cent,

bringing an average of 17.3% per unit. December 22, 1036 tons ore, average produce, 25% per cent., sold at an average of 16.11 per unit; Cape ore, 32 per cent., bringing an average of 17 per unit. Charters for the month of November are advised as 5000 tons fine copper, and for the first half December as 2700 tons fine. The market closes very quiet at £83.10 to £84 for Chili bars, and very little business passing. Tin.—This market has been very firm, and closes with rather an active demand. Final quotations are: Australian, £24; Straits, £29.25 to £30.10; English common blocks and ingots, £100; refined, £202; Peruvian, £75 to £85, according to quality. At the Cornish ticketing, at Redruth, on Thursday, 1032 tons copper ore realized £5704.17.6, being an average of £5.76 per ton; average produce, 7%; fine copper, 79 tons 3 cwt.; average standard, £105.19. The smelters have issued their quarterly statement, from which it appears that 11,397 tons copper ore have been sold during the quarter ending December 25, for an aggregate sum of £261,984.2, being an average of £23.6 per ton; average produce, 7%; fine copper, 89 tons 14 cwt.; average standard, £102.11.

Messrs. Harrington, Hoyan & Co.'s report: "For some days after the despatch of last mail there was a considerable speculative demand for Chili bars, with large transactions, but on the advice from Chili that the charters for November were 5000 tons and for the first fortnight in December 2800, the market became unsettled, and we close with a dull feeling at 10 to 10/- decline upon the quotations then current. They are £83.10 to £84 for good ordinary bars to £87 for best bars, 16 to 16.9 for ore and regulus, 18/- nominally for Corcord Barilla. Business transacted during the fortnight comprises about 1000 tons bars on the spot at £83.10 to £85 per ton, and about 3200 tons bars to arrive, or with extra prompt at £83 to £86.10 per ton; 700 tons ore at Swansea sold at 16 3/4 per unit, 750 tons on private terms, and 100 tons regulus to arrive there at 16.9 per unit. At the Swansea sale by tender on the 22d instant, 1036 tons ore average produce 25.2% per cent. realized 16.11 per unit. Tin—Market good at £95 to £95.10 for Straits, and Peruvian selling at £75 per ton. Lead—Market quiet at £24 for ordinary shipping brands. Spelter.—Market steady at £24 for ordinary Silesian brands."

Messrs. French & Smith report that the market has been generally quiet during the past week. Tin, however, has been in good demand, and a fair business in Straits has been done up to £95, and in Australian up to £94—remaining firm at the highest. Banca, £0 to £102 per ton; Billiton, £95 to £106; Straits, £95 to £105; 10/- Straits, abso or £102; English, re fined, £101 to £102; English common blocks, in barrels, £101 to £102; English common blocks and ingots, £100 to £101 per ton. Tin Plates.—Market good at £95 to £95.10 for Straits, and Peruvian selling at £75 per ton. Lead—Market quiet at £24 for ordinary shipping brands. Spelter.—Market steady at £24 for ordinary Silesian brands."

New iron rails of domestic manufacture have sympathized with the general decline, the price being £63 in January, and at present writing, good makes can be purchased at £52.50 at the seaboard. With but one or two exceptions the mills in this branch have either totally suspended operations, or have been running but part time. In some localities labor strikes of long continuance have prevented a resumption of work, the proprietors preferring to remain idle sooner than filling orders at such ruinously low prices. The output of iron rails has consequently been materially reduced from that of the preceding year, the estimated quantity being 367,334 tons, whilst that of 1873, as now ascertained, was 755,652 tons, showing a reduction of some 388,318 tons.

Average monthly price of American iron rails:

	1873.	1874.
January	£47.00	£49.00
February	44	

HOBART'S TACKS.

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DUNBAR, HOBART & WHIDDEN,
Established 1810.

Office and Salesroom, 116 Chambers Street, New York

Factory, South Abington, Mass.



MANUFACTURERS OF

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Tinned, Leathered and Large Head Carpet Tacks, Finishing Nails, Black and Tinned Trunk Nails, Miners', Gimp, Lace and Brush Tacks, Hungarian, Chair, Cigar Box and Barrel Nails, Glaziers' Points,

IRON, STEEL, COPPER, ZINC AND BRASS SHOE NAILS,

Heel and Toe Plates, Steel Shanks, and Fancy Head Nails, Silver or Japanned Lining and Saddle Nails.

A full assortment always on hand at salesrooms, for immediate delivery if required. Odd and irregular sizes made to order or cut from sample at short notice. Send for Price List.

cult to settle down to ante-bellum prices. With some few exceptions, however, the men have seen the folly of resistance, and have generally accepted the terms of their employers. A spirit of economy and retrenchment has taken the place of the waste and extravagance of the past few years, and consequently lower prices for all standard articles has ensued. Although some few think there is room for still lower figures, we cannot agree with them. We think that we have touched bottom in raw iron, and that the market hereafter will be firmer. Although it is not probable nor desirable that iron should rapidly advance, and we believe both consumers and producers agree on this point, it is probable that the price of No. 1 will average \$30 at the seaboard for the coming year, and at this price we are told there is a small profit to the maker. The resumption of new railroad enterprises to any great extent is not probable for the near future, but many uncompleted roads will no doubt be finished, and as there are a large number of these, we may fairly look for a better business in both iron and steel rails.

We close the year's review committing ourselves to the prediction that at the end of the coming twelfth month it will be our pleasure, or some one else's, to chronicle a more prosperous year than the past.

Very truly,
EDWARD SAMUEL & CO.

The Iron Trade of the Province of Liege, Belgium.

The Liege Chamber of Commerce has issued a report, from which the following are extracts:

Mines.—The native ores have contributed to a great extent to keep the furnaces going, and the quantity necessary to make up the desired amount for the supply of pig iron has been obtained from Luxembourg; while the ores for the special pig iron required by the steel works and engine shops have been imported from Spain, Algeria and Nassau. As the establishments which produce the ordinary pig iron possess, as a rule, mines of their own, the price of ores did not, in 1873, experience so much fluctuation as the other industrial products. Foreign ores have, however, been subject to a much more variable rate, and those employed in the steel manufacture have fetched high prices in the countries from which they were extracted.

Blast Furnaces.—The demand for pig was kept up during the first half of 1873, under the very active and favorable conditions of the year 1872. Prices, which had, at the end of 1872, attained an extremely high rate (14½ fr. per 100 kilogrammes = £5.18 4 per ton, for No. 1 quality), only began to decline toward the month of June, and were successively reduced to 12 fr., 11 fr., and, at the end of December, to 10 fr. Nevertheless, a good deal of business was done, and, owing to a portion of the furnaces having been put out, stocks were kept relatively low.

Foundries.—These establishments were very busy during the larger portion of 1873. Prices, which at the beginning of the year were about 30 fr. per 100 kilogrammes (£12.4 10 per ton) for ordinary castings, soon afterward rose to 32 fr., at which figure they were generally maintained. It was only at the end of the year, when export orders were completed, that the production slackened, and resumed its usual state; but the fall coincided with the diminution of the prices current of pig iron and coke. At the end of November castings fetched 30 fr. per 100 kilogrammes, and at the end of December, 28 fr., rates which were still quite remunerative.

Ironworks.—The production of finished iron during the first months of the year was only limited by the want of hands. The unusually large number of orders received had, naturally, the effect of causing a great firmness in prices. Merchant irons of best quality, which fetched the rate of 30 fr. per 100 kilogrammes (£12.4 10 per ton) in January, rose to 32 fr. in February, March and April; but the demand fluctuated, and prices went down to 28 fr. at the end of the first six months of the same year. In October,

the rate, quite nominal, fell to 24 fr., and at the end of December to 22 fr.

Railway bars, firmer than merchant iron were quoted at 27 fr. per 100 kilograms (£11.1 per ton); rolled joists of best quality, 25 fr. (£10.4/); and plates, 33 fr. (£14.5/). Thus the year, having commenced under very favorable conditions, which became even more favorable still during the first few months, was far from answering the expectations which were raised concerning it.

Steel Works.—Steel works have been developed to an important extent, and, although the employment of steel continues to increase every year, the production has been commensurate with the demand; prices could not, therefore, follow the general upward movement of the other iron products. Quotations for railway wagon tires remained at 46 fr. per 100 kilograms (£18.15/6 per ton), and for locomotive tires at 57 fr. (£23.5/3). The price for rails, of 44 fr. (£17.19/2) was not exceeded in 1873. The general slackness at the end of this year was much felt in steel works; their position, therefore, at the beginning of 1874 was unsatisfactory in proportion to the stock of raw material on hand.

Engine and Machine Works.—The activity of these works, so satisfactory in 1872, was still more so in 1873, and orders were very abundant; since that time, however, they fell off by degrees.

The rise in wages and the increased cost of raw material, especially coal, exerted so great an influence on the finished articles that they attained prices which naturally had the effect of driving new orders away and closing the markets; and the fall in coal and other raw material has not had the effect of reviving trade. The Vienna Exhibition afforded an opportunity to our manufacturers of introducing their productions to the notice not only of the public, but also of the juries, who, in this international competition, awarded them the highest prizes, and to the largest extent possible. In the present stagnation, the government should come to the aid of manufacturers by claiming the prompt execution of contracts; and contractors could not complain of this course, because the present time is favorable for their procuring the necessary supplies, and the country would all the sooner reap the benefit of works, the utility of which is recognized. The government should also take advantage of the present state of affairs, to order the material it requires for the working of the railways; as our works, not burdened with orders at the present time, might execute those of the State under the most favorable conditions.

Boiler Works.—have had their fair share of work under the same favorable conditions as those of the engine and machine works.

It is calculated that there is sufficient first-class ironstone in Cleveland, England, to enable a production of over 7,000,000 tons a year to be maintained for over one hundred years; and as the annual output of ironstone has not yet exceeded 6,000,000 tons, there is manifestly a large reserve still to fall back upon. It is difficult to quote a price which could be fairly regarded as the current value of ironstone in Cleveland. The great bulk of the ore is sold to pig iron makers (in cases where it is not raised by themselves) under contracts of long standing, and only a comparatively small proportion of the total quantity of ironstone raised is absolutely free for sale. At the present time, however, ironstone may be purchased in Cleveland for 6 per ton, being from 2 to 2 1/2 less than the price quoted in the early part of 1873.

Ironworks.—The production of finished iron during the first months of the year was only limited by the want of hands. The unusually large number of orders received had, naturally, the effect of causing a great firmness in prices. Merchant irons of best quality, which fetched the rate of 30 fr. per 100 kilogrammes (£12.4 10 per ton) in January, rose to 32 fr. in February, March and April; but the demand fluctuated, and prices went down to 28 fr. at the end of the first six months of the same year. In October,

From a report of Dr. Waller Lewis, regarding the health of French working men, it appears that the percentage of deaths from consumption, in 100 cases collated, is for various trades

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LITTLE JOKER.

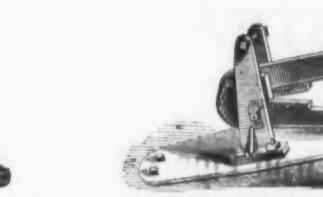
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It is beautiful
MOST PERFECT
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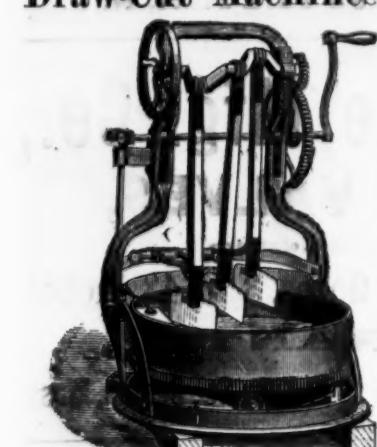
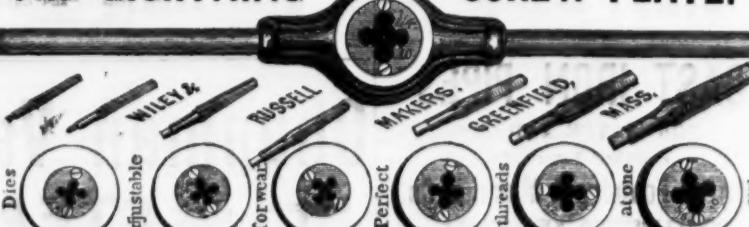
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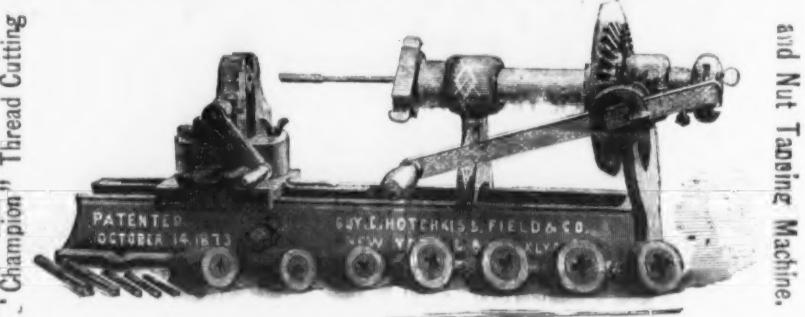
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(ESTABLISHED) 1843.

These Anvils are manufactured at the oldest Anvil Factory in this country.
They are superior to the best English, or other Anvils, on account of the peculiar
process of their manufacture (invented and used only by this concern), and from
the quality of the materials employed.The best English Anvils, after a time, become hollowing on the face by continued
hammering in use, on account of the fibrous nature of the wrought iron—causing it
to "settle" under the face.The body of the Eagle Anvils being of crystallized iron, no such settling can
ever occur, and the steel face, therefore, remains perfectly true. And it has the
great advantage that being of a more solid material, and consequently with less rebound,
the piece being forged receives the full effect of the hammer, instead of a
part of it being wasted by the rebound, as with a wrought iron anvil.An equal amount of work can, therefore, be done on this Anvil with a hammer one-fifth
lighter than that required when using a wrought iron anvil which is more elastic.The working surface is in one piece of Jessup's Best Town Cast Steel, which
after being thoroughly ground, is hardened and given the proper temper for the
heaviest work. The face is covered with a hard steel plate made entirely of steel.The body of the Anvil is of the strongest grade of American iron, to which the cast
steel face is warranted to be thoroughly welded and set to ~~open~~.REDUCED PRICE LIST. ANVILS weighing 100 lbs. to 800 lbs. 1c. per lb.
Smaller Anvils, 1c. per lb.
No. 1. 15 lbs. 20 lbs. 30 lbs. 40 lbs. 50 lbs. 60 lbs. 70 lbs. 80 lbs. 90 lbs.
Weighing about 10 lbs. 15 lbs. 20 lbs. 30 lbs. 40 lbs. 50 lbs. 60 lbs. 70 lbs. 80 lbs. 90 lbs.
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LARD PRESSES.First premium medal in 1874, at New York, Boston and
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work possible with any other screw plate. Also HAND BOLT CUTTING MACHINES, ranging
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SCREW CUTTING MACHINERY AND TOOLS.**The Albany Steam Trap.**This Trap automatically drains the water of
condensation from Heating Coils, and re-
turns the same to the Boiler whether the Coils
are above or below the water level in Boiler, thus
doing away with pumps and other mechanical
devices for such purposes. Apply toTOWNSEND & BLESSING,
Albany, N. Y.**Guy C. Hotchkiss, Field & Co.,**

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This machine has revolving and sliding jams, which enables the operator to cut all kinds work, no
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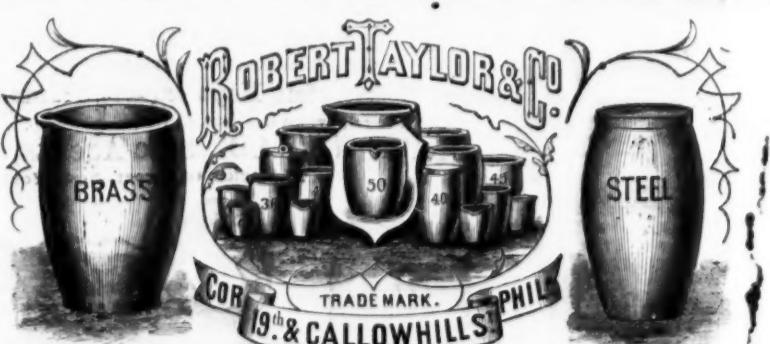
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Steel, Brass, Gold, Nickel and all kinds of Metals.

Mr. Robert Taylor, who was for seven years the head of the late firm of Taylor, Strow & Co., and who
is a practical mechanic, and familiar with all the details of the manufacture of Crucibles, attends personally
to our manufacturing department. We would, therefore, respectfully solicit a continuance of the
avows hitherto extended to him.**ROBERT TAYLOR & CO.,**

No. 1900, 1902, 1904 & 1906 Callowhill, St., Philadelphia.

General Agents, MERCHANT & CO., 507 Market Street, Philadelphia.

PARK & CO., 123 Second Avenue, Pittsburgh, Pa.

Pipe, Fittings, &c.

Thomas T. Tasker, Jr.

Stephen P. M. Tasker

MORRIS, TASKER & CO.,
PASCAL IRON WORKS, Philadelphia,
TASKER IRON WORKS, New Castle, Del.



Office, Fifth and Tasker Streets, Philadelphia.

Office and Warehouse, No. 15 Gold Street, New York.
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Manufacturers of

WROUGHT IRON WELDED TUBES.
Plain, Galvanized and Rubber-Coated, for Gas, Steam and Water.

Lap-Welded Charcoal Iron Boiler Tubes.

Oil Well Tubing and Casing, Gas and Steam Fittings, Brass and Steam Filters, Tools, Cast Iron Gas and Water Pipe, Street Lamp Posts and Lanterns, Improved Coal-Gas Apparatus, Etc.

Ecton Mills Genuine London TURKEY EMERY.

TRADE MARK.



ABBOTT & HOWARD, Agents for the United States.

51 John Street, New York.

35 Oliver Street, Boston.

BAILEY'S PATENT ADJUSTABLE PLANES.

Thirty different styles in

IRON AND WOOD.



80,000 ALREADY IN USE.

Carpenters,
Cabinet Makers,
Car Builders,
Carriage Makers,
Millwrights,
Wheelwrights,
All Use them.Smooth Planes,
Jack Planes,
Fore Planes,
Jointer Planes,
Block Planes,
Rabbet Planes,
Circular Planes.Manufactured by the STANLEY RULE & LEVEL CO.,
Factories: New Britain, Conn.

Warehouses: 35 Chambers Street, New York.

AMERICAN LOCK MFG. CO.,

Manufacturers of

FELTER'S**Locks & Latches,**

Comprising

Store Door Locks, Night Latches,
Drawer, Desk and Pad Locks,
All of which are furnished withSMALL, FLAT, AMERICAN STERLING METAL KEYS,
Which are stronger than steel, and cannot be affected by rust, and will remain bright and clear under all ordinary circumstances.

A candid examination will convince the most unbelieving, that for simplicity, durability, convenience, and safety, they challenge comparison with any now before the public. Being made entirely by new and expensive machinery, especially constructed to manufacture them, they will rival the best made Locks in Finish and perfect operation.

These Locks give perfect satisfaction, because they are the safest, cheapest and most durable Lock ever presented to the public, having thirty-five finely finished Brass Tumblers in each Door and twenty-eight in each Drawer Lock, each one being finely false notched.

Each tumbler bearing on the key at two different points while locking or unlocking, without the aid of springs, which cannot be said of any other patent Tumbler Locks in use.

THE LOCKS ARE FITTED TO THE KEYS,
And not the Keys to the Locks.Hence Counterfeit Keys cannot be made.
For descriptive list and terms, address,UNION NUT CO., Sole Agents,
78 Beekman Street, New York.

FULL SIZE OF KEY.

New Patent "X" Razor Strap.

PATENTED DECEMBER 23, 1873.

This Strap, designated on our List as Letter "X," is of novel construction—is elastic, pleasantly yielding to the razor—gives a keen fine edge—is made of superior stock—is furnished at a low price—and gives universal satisfaction.

ITS PRICE SELLS IT.

BENJAMIN F. BADGER, Sole Manufacturer,
Badger Place, Charlestown, Mass.

Pipe, Fittings, &c.

National Tube Works Co.,

BOSTON, MASS. and McKEESPORT, PA.,

MANUFACTURERS OF

**Best Quality Lap Welded Iron Boiler Tubes,
STEAM AND GAS PIPE,**Artesian Oil and Salt Well Tubing and Casing,
With Patent Protecting Coupling;

Mack's Patent Injector for Feeding Boilers.

JAMES C. CONVERSE, President.
WM. S. EATON, Treasurer.
McKeesport.

New York Office and Warehouse 78 William cor. Liberty Street.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS**For STEAM, WATER**

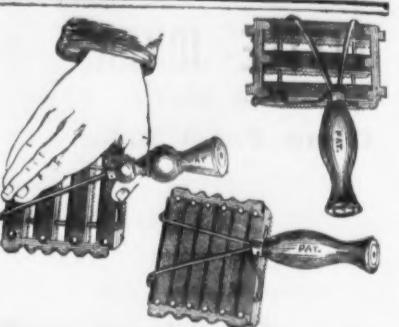
and GAS.

Wrought Iron Pipe & Fittings, Plain and Galvanized
PLUMBERS' MATERIALS.

Illustrated Catalogue sent by express to the Trade on application.

Factory, Paterson, N. J.

56 John Street, N. Y.



We call your attention specially to our new patent endless wire frame comb. The result of a long series of experiments, with a view to meeting all the requirements of a good comb. It is better, stronger, and more durable than any other comb. The twisted wire shank gives what has never before been attained, viz.: a rest and brace for the thumb, in such a position that the hand cannot come in contact with the horse wire teeth. The wire shank is so bent that from the shank over to the front teeth give strength and durability in a direction never heretofore attained, and at the same time serve as an extra handle; and when clasped by the fingers, the twisted wire shank is more firmly, easily, and completely held, and with much less fatigue to the hand than is possible in any other formation—in short, it needs but a trial to vindicate its name : The Perfect Comb.

THE LAWRENCE COMB CO.

Factory and Office.

382 2d Ave., cor. 22d St., N. Y.

WILLIAMS WHITE & CHURCHILL,

Successors to

MACKRELL & RICHARDSON MFG. COMPANY

Manufacturers of

Builders' Hardware,
Locks, Hinges, Hooks and Staples,
Awning Hooks, Meat Hooks, Pincers,
Champion Noiseless Pulleys,
CHAIN PULLEYS & C.Factory, cor. Flushing and Nostrand Avenues
WAREHOUSE, 73 Warren St., N. Y.

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WM. S. CARR & CO.

Sole Manufacturers of

Carr's Patent Plumbers' Goods
Pumps, Water Closets, Fountains,
Vases, &c.

OFFICE AND WAREHOUSES

106, 108 & 110 Centre Street,
Factory, Mott Haven, New York.

R. D. WOOD & CO.,

PHILADELPHIA,
Manufacturers ofCast Iron Water and Gas Pipe,
Lamp Posts, Retorts, &c.**PANCOAST & MAULE**
227 Pear St.
PHILADELPHIA.**WROUGHT IRON PIPE**
FITTINGS, BRASS & IRON VALVES & COCKS
TOOLS & STEAM FITTERS SUPPLIES &c.
PIPE CUT & FITTED TO PLANS FOR MILLS &c.**CONTRACTORS**

FOR HIGH & LOW PRESSURE STEAM HEATING APPARATUS FOR ALL CLASSES OF BUILDINGS.

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EATON & COLE.

Manufacturers of

Wrought Iron Pipe

Fittings,

BRASS

VALVES.

COCKS, TOOLS, &c.

58 John Street, NEW YORK.

Sole Agency for the Pacific Coast for

Regester's Patent Gauge Cocks,
CONROY, O'CONNOR & CO.,
San Francisco, Cal.

Also, Bache & Mathews' Patent Hydrant. This Hydrant is perfectly anti-freezing, is the most ornamental and the cheapest made.

R. PAYNE, Selling Agent.

Office, 178 Broadway, N. Y.

Nelson, Finkel & Co.,

439 East 10th St., New York,

Manufacturers of

Jenkins' Patent

Compression

Valves

AND

Gauge Cocks

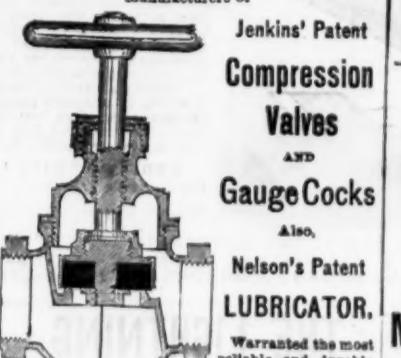
Also, Nelson's Patent

LUBRICATOR.

Warranted the most

reliable and durable

in the country.

**CAST IRON PIPES**

FOR WATER AND GAS.

Branches Retorts, &c.

Warren Foundry & Machine Co.,

PHILLIPSBURG NEW JERSEY.

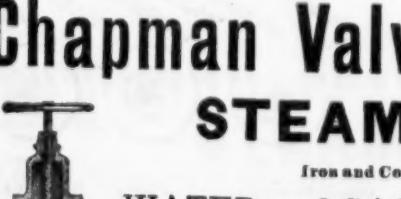
**WHEATCROFT'S
SELF-ADJUSTING PIPE WRENCH.**

Forged from Best Tool Steel.

The dog is solid over the head of the lever bar, taking the strain off from the pin.

Each Wrench takes four Sizes of Pipe.

J. AUSTIN & CO. 108 Fulton St., N. Y.

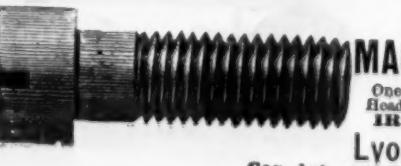
**Chapman Valve Mfg. Co.,
STEAM VALVES,**

Iron and Composition, of all sizes.

WATER and GAS Gates, 3 to 48 inches

HYDRANTS.

Office and Warehouse, 75 & 77 Kilby St., Boston, Mass.

**TURNED
MACHINE SCREWS,**

One-sixteenth to five-eighths diameter.

Heads and points to sample.

IRON, STEEL and BRASS.

Lyon & Fellows Mfg. Co.,

Cor. 1st and North 3d Streets, Williamsburg, N. Y.

Depot for New York City Delivery, with UNION HARDWARE CO., 120 Chambers, and 50 Warren Street.



Licensed by United Nickel Company.
NEW YORK
Nickel Plating Co.
Works, 133 & 135 W. 25th Street,
Office, No. 18 Park Place,

Philadelphia Nickel Plating Works.
John Hartman,
No. 1042 Ridge Avenue, Philadelphia.
ELECTRO-NICKEL PLATING
On all Metallic Articles finished in the best manner
GARAGE, 4135 Lancaster Avenue.

STEAM GOVERNOR
WARRANTED BEST IN USE.



RIEHLE BROTHERS.
Sixth Street, near Locust, Philadelphia.
New York Store, 185 Liberty Street.
Pittsburgh Store, 285 Liberty Street.

Rogers' Self-Sharpening **H O E.**

The best Hoe in market. It will not batter or break. Wear itself sharp. Will last twice as long as any other Hoe, and is warranted to cut the "Bolles Hoe" or any Hoe in market.

John H. Reed & Co.,
IRON MERCHANTS.

And Agents for
BAY STATE IRON CO.

The advertisement features a decorative banner at the top with the words "GOLD MEDAL" in bold letters. Below the banner are two circular medallions. The left medallion contains the text "BAY STATE IRON CO. FOR HOMOGENEOUS BOILER PLATE". The right medallion contains an illustration of a person working on a large piece of machinery or a wagon. The entire design is framed by ornate scrollwork.

**ANGLE & T IRON, BOILER & TANK RIVETS,
Lapwelded Iron Boiler Tubes,
Wrought Iron Steam & Gas Pipe.**

2 Pemberton Sq., Boston, Mass.

HEATON & DENCKLA,
HARDWARE COMMISSION MERCHANTS
PHILADELPHIA

PHILADELPHIA.
Branch Office, 103 Duane Street, New York.

**Mallory, Wheeler & Co.,
American Screw Co.,
Douglas Axe Mfg. Co.,
Stuart, Peterson & Co.'s Cast
ings,
Mallory & Brumner's Belts.**

**Union Mfg. Co.'s Drilled
Butts.**
Western File Works.
Philadelphia Carriage Bell.
Aiken's Saw Sets.

A detailed black and white illustration of a mechanical device used for threading pipes. The machine features a large central rotating component with various tools attached. A long handle is visible on the left side, and a smaller handle or lever is on the right. The overall design is industrial and complex, reflecting the engineering of early 20th-century machinery.

January 21, 1875.

Keystone Saw, Tool, Steel and File Works.

Front and Laurel Streets, Philadelphia.

MANUFACTURERS OF

Barker's Patent Double Reversible Joint Butt Hinges and Concealed Door Springs.

THE BEST IN THE UNIVERSE, ALWAYS RELIABLE.

They never get out of order, and give unbounded satisfaction wherever they are used.

HENRY DISSTON & SONS desire to call the attention of the Hardware Trade; also Architects, Builders, Carpenters, and all parties interested, to the

PATENT REVERSIBLE BUTTS

represented in the annexed engravings.

For the doors of Churches, Schools, Theatres, Banks, Factories, Public Buildings, Hotels, and all places where it is necessary or desirable to swing a door both ways, these Hinges are vastly superior to all others. The neatness of the Butt and the simplicity of its construction make it far more desirable than most of the uncouth and unwieldy hinges now in common use. The concealed spring is the strongest, most durable, and the simplest, consequently the least liable to get out of order.

It is the *neatest*, and being concealed, does not present that unsightly appearance which usually so disfigures doors that have Springs.

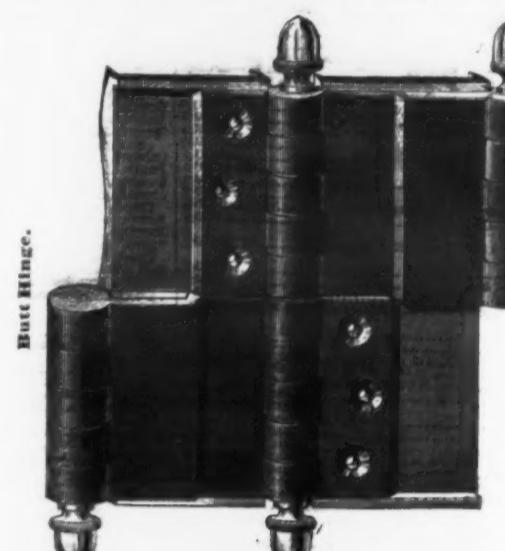
It relieves the Butts of the weight of the door, and consequently adds to the strength.

It prevents the door from sagging.

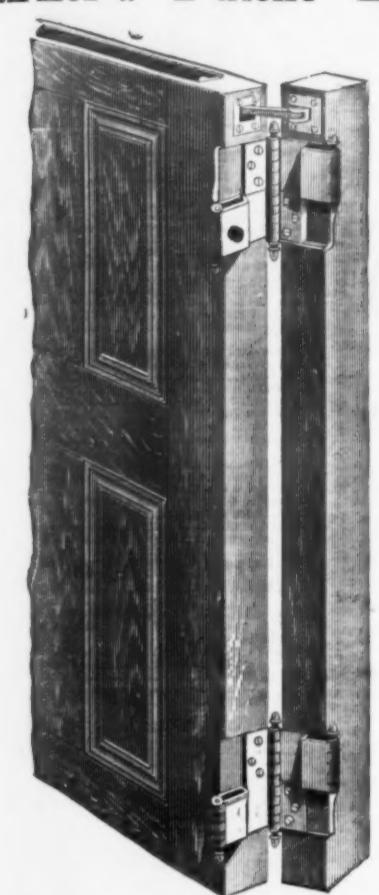
It is more readily applied and easily disengaged, and is altogether the most effective, convenient and elegant Spring that has ever been offered to the public.

Every Spring has been thoroughly tested, is warranted, and will bear twice the strain that is ever applied to a door.

It is by far the cheapest.



Butt Hinge.



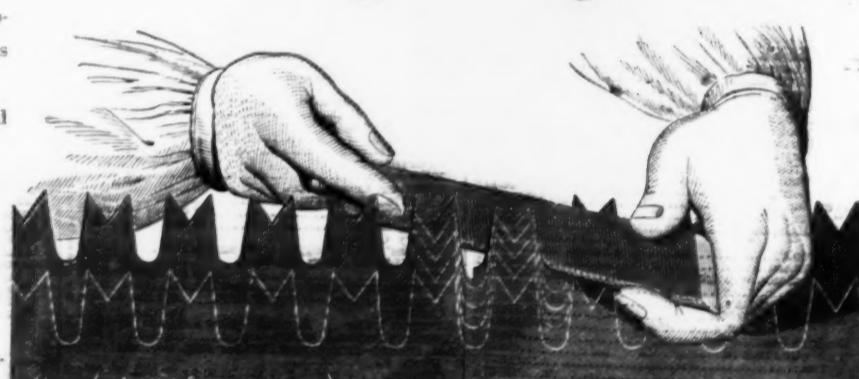
View of door with Hinges and Spring in position.



Concealed Spring.

Cross-Cut Saws.

We desire to call special attention to our various styles of Cross-Cut Saws represented in this week's issue.



Dwight Gaffey Co.

THE GREAT AMERICAN.

In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the **BEST CROSS-CUT SAWS** ever offered to the public. The most important peculiarities of this Saw are as follows:

The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "tearing of the wood, undue friction and drag," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "Great American Regulating Cross-cut."

The above engraving represents a section of "Lumberman" Cross-Cut Saw, with File specially adapted for keeping said Saw in order. By using the File here illustrated, with the edge made to fit the gullet or space between the Teeth, and pressing downward while filing, you will preserve the original shape of the Teeth as described by dotted lines and notch in engraving. You pay for the edge of the File as well as the flat—then why not use it? and thus keep your Saw always gummed and in order, and avoid the risk of breaking or buckling the Saw by the old method of gumming. This File is manufactured expressly for the purpose of keeping in order the Teeth of our Improved Saws known as the Climax and Lumberman, and can be used with equal facility on either Saw. If the File be used according to our instructions, viz.: pressing down in the gullet at the same time the edge of the Tooth is being filed, the effect will be so convincing that persons will never return to the use of the old style File, or any other of the so-called Improved Teeth. We also manufacture a File for keeping the Great American and Climax in order.



THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.



THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.



THE NONPAREIL.

The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.



In the manufacture of all our Fast-Cutting Saws, we have carefully avoided the pernicious and destructive practice of making Under-Cut Teeth.

All Saws made on this principle are miserable failures. It is simply applying a Rip Tooth to the purpose of cross cutting, an idea which has been long ago exploded. To get an Under Cut, the Tooth must be wider at the extreme point than at any other part, and each successive filing must result in rapid reduction in the width and ultimate loss of shape, as shown in the annexed diagrams.

No. 1, Fig. C, represents the undercut tooth as it leaves the factory; Nos. 2, 3, and 4, Fig. C, show how No. 1 most ultimately becomes under any style of filing that may be adopted. No. 1, Fig. D, shows a tooth with parallel edges, and No. 2, Fig. D, shows the shape of said tooth after several filings. The white lines on the diagrams represent the successive cuts of the file.



GAUGE FOR REGULATING CLEANING TEETH.

The Cleaning Teeth of all Saws should be somewhat shorter than the Cutting Teeth, and, although shortened, they should be of uniform length throughout. The inner edge of the Gauge rests on the points of the Cutting Teeth, the Cleaning Teeth projecting through the opening in center of Gauge. Reduce the projecting points by means of a File until arrested by the edges of the Gauge, which is made of hardened steel. Thus Tooth after Tooth can be rapidly and correctly reduced to an even length by any unskilled operator.



Showing the Gauge in Position for Filing the Cleaner-Tooth.

Henry Disston & Sons.

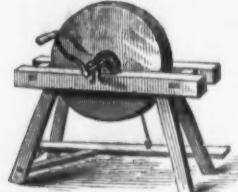
New York Wholesale Prices, January 20, 1875.

HARDWARE.

Tapes, Measuring, American Flax and Cap Co.	dia 20 1/2	per doz \$1.92
Eddy's.	dia 20	1/2
Ten Trays, American Tea Tray Co.	dia 15 1/2	1/2
Thermometers.	dia 50 & 10	1/2
Tin Case.	1/2	1/2
Toe Calks.	1/2	1/2
Toys.	1/2	1/2
Trunks, Tubs and Machines, P. S. & W.	list net	1/2
Traps.	1/2	1/2
Newell's.	1/2	1/2
Post Stow & Wilcox.	1/2	1/2
Blake's Patent.	1/2	1/2
Mouse, Wood Choker.	1/2	1/2
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No. 2.	1/2	1/2
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Bennett Hotchkiss and
N. C. Stiles' Patent.

This Drop (which has been illustrated in this journal) of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The first and most important are those of BENNETT HOTCHKISS (who in an interference suit with Goulding and Cheney was declared the first inventor) and N. C. STILES. Our improvements consist:

First.—An upright rod is attached to the hammer, which is held in a cradle, and the upper end of the rod is secured to the lower end of a lever, the lower end of which is secured to the end of a lever which is operated by the hand or foot. The lower end of this lever is attached to the top of the hammer, so that the hammer will descend when the lower lever is moved, without disturbing the hand lever, thereby preventing the hand being injured, as otherwise would be the case.

Second.—No dog is used on the upright to hold up the hammer, but a leather strap is passed up over the two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but on descending they will close and hold up the hammer. To do this the leather straps are opened by a pressure upon the foot treadle.

Third.—The board or belt is secured to the hammer by an elastic connection, which prevents the sudden jar and destruction of the same. The back rods are made adjustable to different thicknesses of board or belt, as also are the clamps. An adjustable rod on the upright rod allows a blow of a height of 12 inches to be given to the treadle and remove the pressure as soon as the blow is given. Keep the foot upon the treadle and the blow will be given. If the blow is given from a state of rest, the blow will be given from a height of less than the second or third, and obtained from a state of rest. A gentle pressure upon the treadle will allow the hammer to go down slowly, but it will stop and remain suspended at any point as soon as the pressure is removed.

The clamps in holding up the hammer keep the board from touching either roll and prevents the same from being worn uneven.

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SCREW WRENCHES.



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Established
in 1859.
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We would also call attention to the fact, that in 1869 we made several important improvements (secured by patents), on the old wrench previously manufactured by L. & A. G. Coes, which were at once closely imitated and sold as the *Genuine* Wrench by certain parties who seem to rely upon our improvements to keep up their reputation as manufacturers, and although the fact of their imitating our goods may be good evidence that we manufacture a superior Wrench, we wish the trade may not be deceived on the question of originality. Trusting the trade will fully appreciate our recent efforts, both in improvements on the Wrench and in the adoption of a Trade Mark, we would caution them against imitations. None genuine unless stamped.

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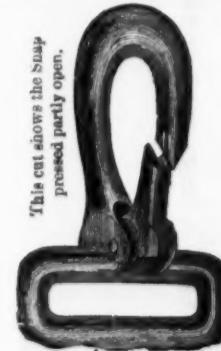
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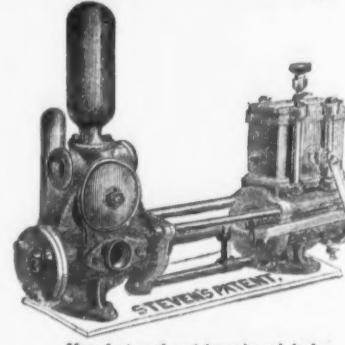
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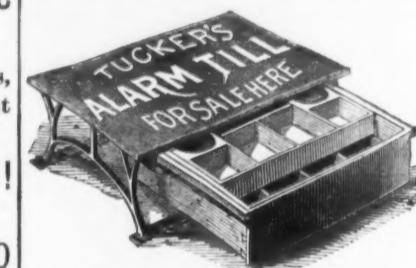
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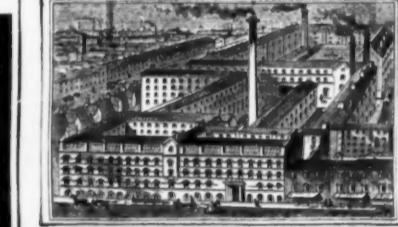
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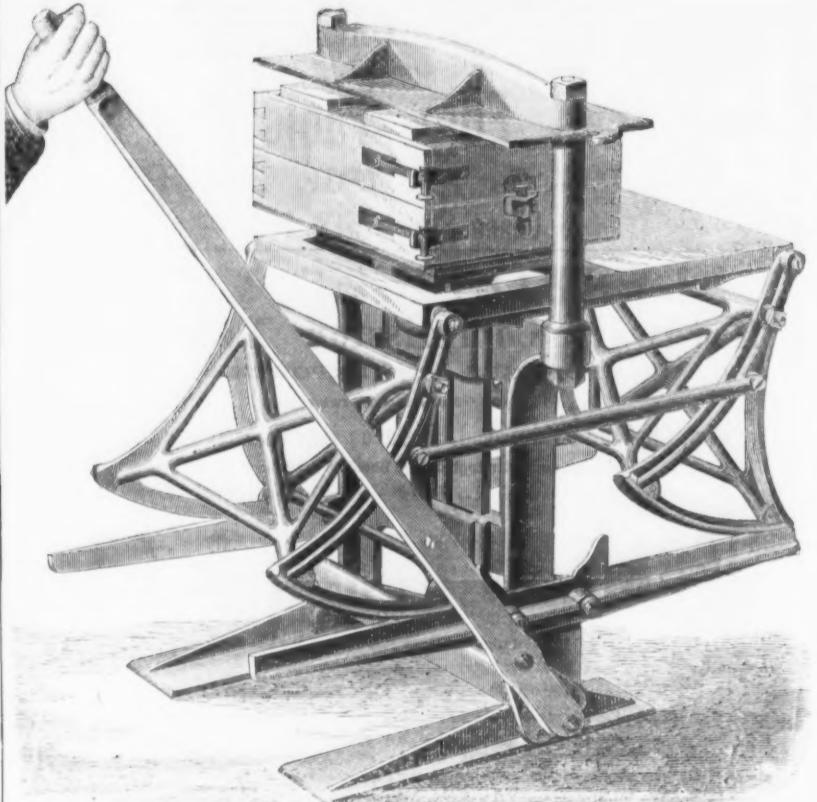
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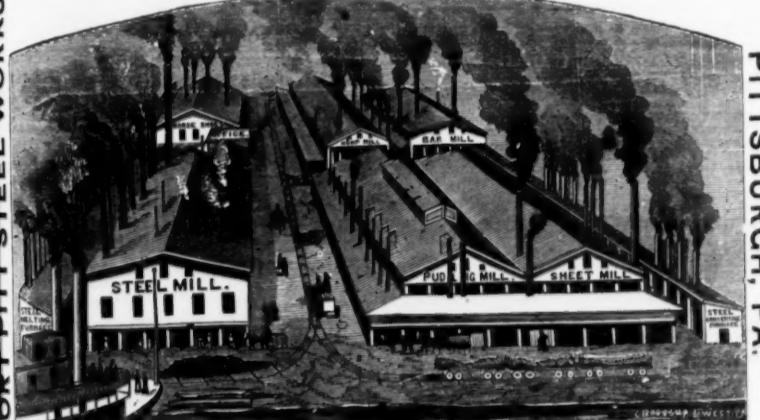
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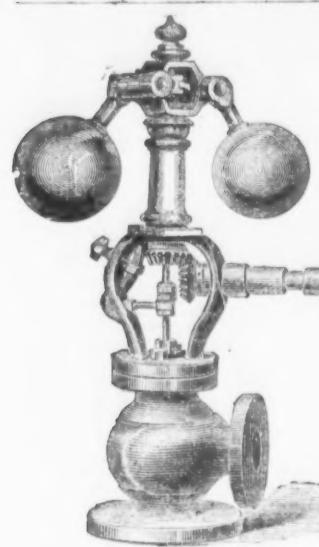
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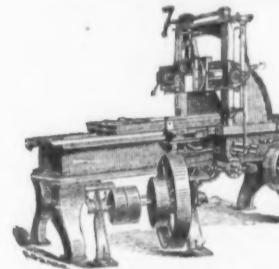
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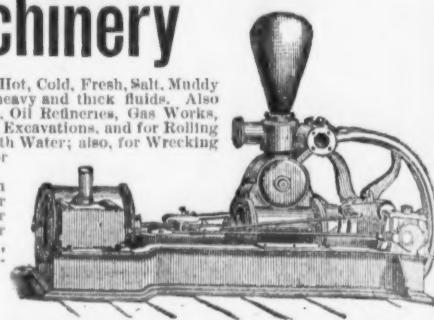
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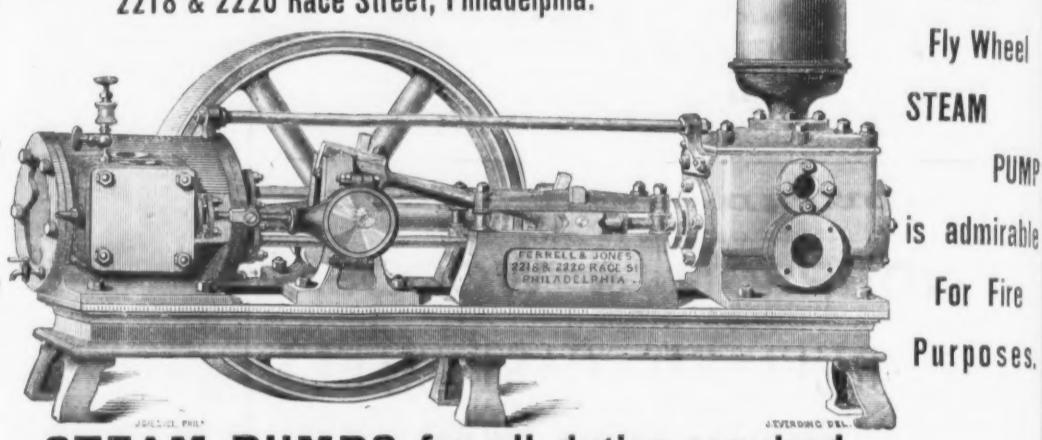
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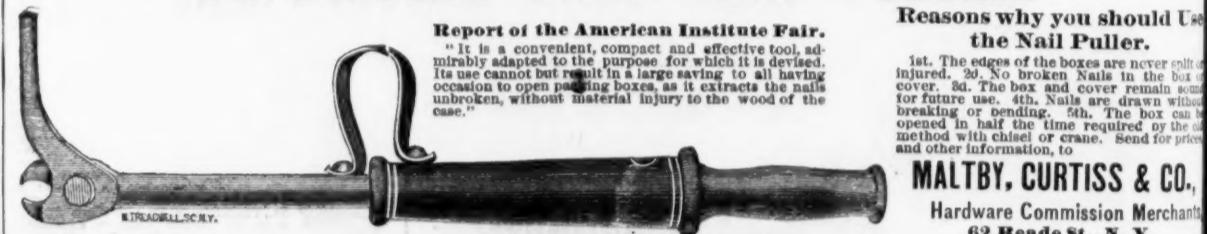
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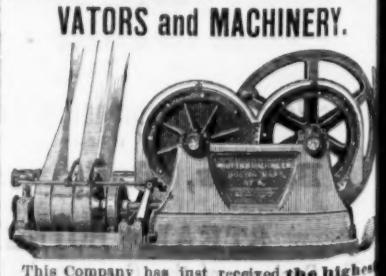
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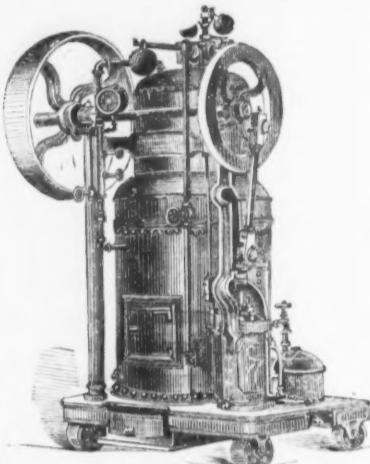
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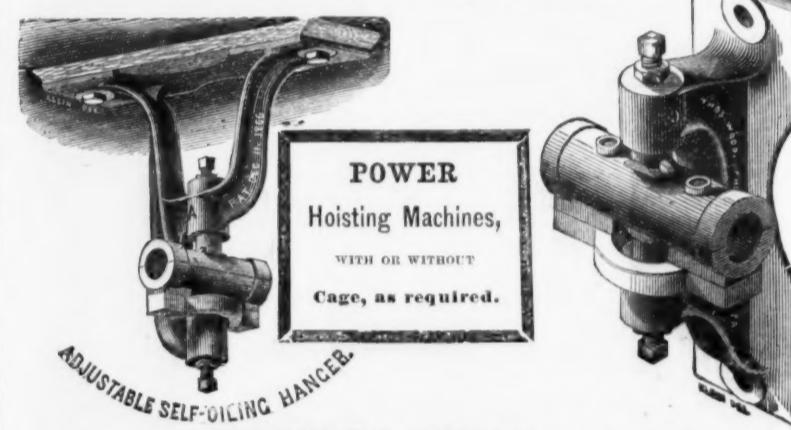
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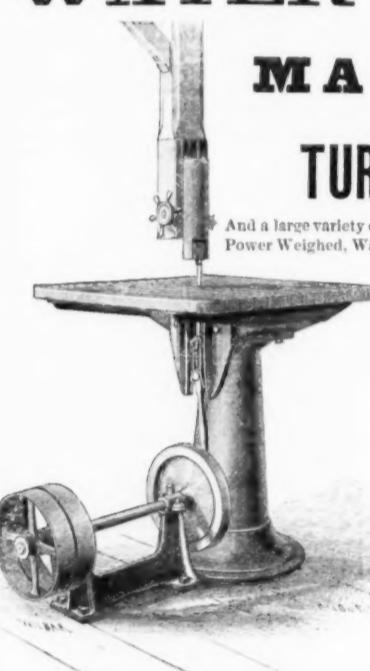
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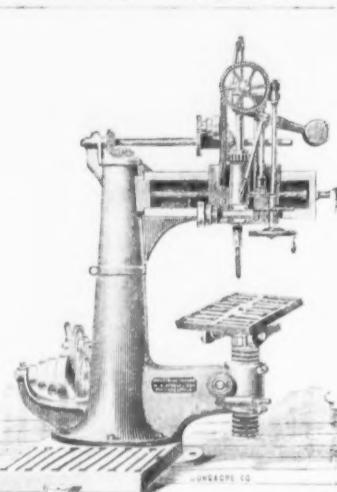
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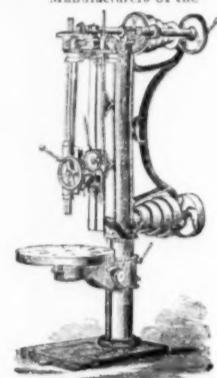
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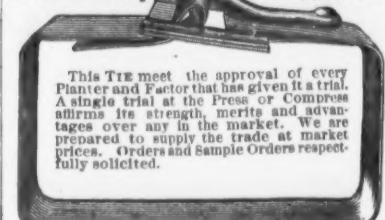
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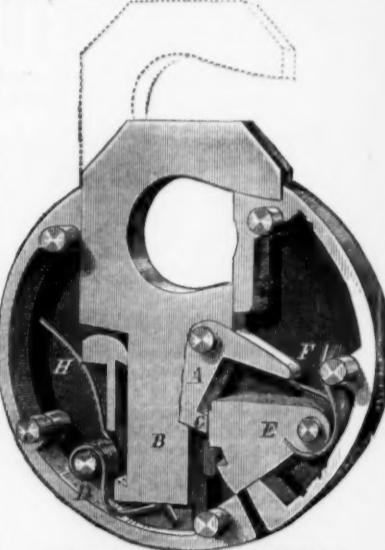
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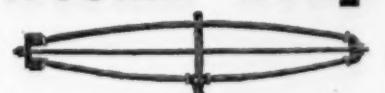
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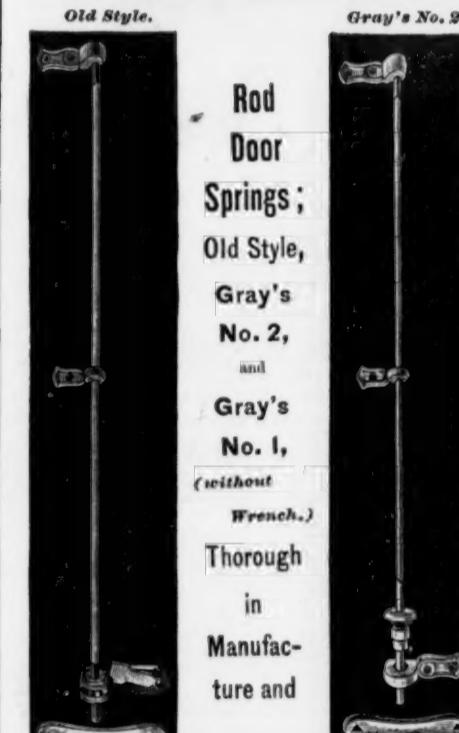
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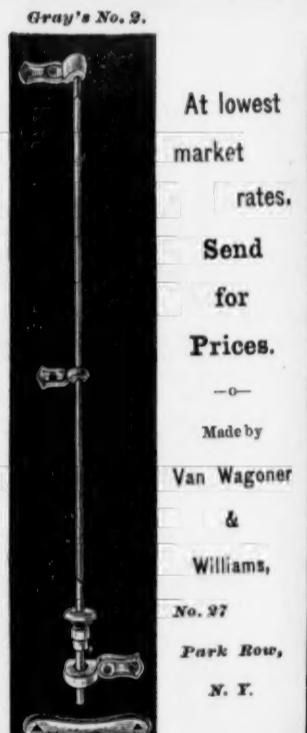
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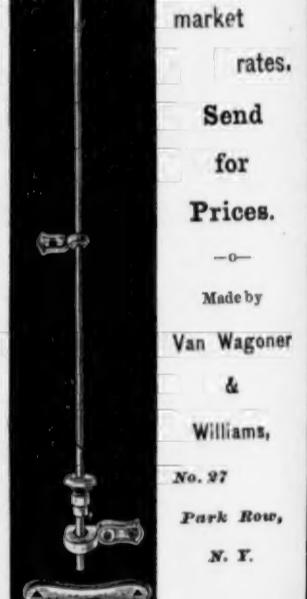
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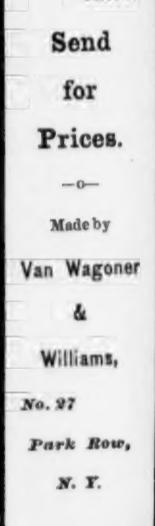
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